The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

VOL. 23. NO. 33 TULSA, OKLAHOMA, JANUARY 8, 1925

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TABLE OF CONTENTS

SPECIAL ARTICLES

Oklahoma Production Shows Big Decline 19
By Andrew M. Rowley
Crude output of all fields of country has decreased 45,453 barrels daily in three weeks despite Wortham.

Seven-Year Survey of Refining Industry 20
By Charles E. Bowles
So well balanced annual supply of gasoline, kerosene, fuel oil and lubricating oil kept within 2 per cent of demand.

Current Supply and Demand, Refined Products, 1918-1924 (Graph) ..... Inset Between Pages 16 and 17

Estimates of Oil Reserves Contrasted 21
By L. M. Fanning
Upward revision forced by revelations of drill. Striking changes in calculations of indicated years' supply.

Germany's Efforts to Find Oil Pools (Illustrated) 24
By Dr. L. Sommermeier
Chief of geological department of Deutsche Bank details past and operations in search for petroluem.

First Decrease Since 1906 (Editorial) 28

French Point of View on Petroleum 36
By P. Vaschetto
Naval delegate to America for fuel oil supplies interprets oil policy of his country, predicting in creased demand.

Standard of Indiana Wins Point in Missouri Supreme Court 74

Vapor Pressure in Gasoline Movement 90
Practical problem confronts natural gasoline industry during 1925. Methods of determining vapor tension.

Industry Beginning to Realize Scientific Research Necessary 90
By Charles E. Kern

Vacuum Distillation Transition 126
By T. S. Sligh, Jr.

New Angle on Major Pool Production 46
By James McIntyre
November output, graded, shows a large percentage of low gravity crude. Gravity changes since January.

Only Three Big Industries Carry Larger Stocks Than Oil 52

Oil Securities Display Strong Tone 108
By N. O. Fanning
Attention well distributed among various issues while some low priced independent issues made sensational advances.

General History of Indiana Oil Fields 112
By Whit
Trenton Rock fields interesting to operators who wonder if they "will ever stage a come-back."

FIELD OPERATIONS

North Central Texas 39
By Dan F. Dugan

East Central Texas 39

Oklahoma 40
By C. D. Lockwood

Canada 46
By Victor Lauriston

North Louisiana-Arkansas 48
By M. L. Vaughn

California 50
By L. P. Stockman

Kansas 52
By C. D. Lockwood

Rocky Mountain Area (Map of Fort Collins Field) 54
By F. B. Taylor

Central West 56
By Whit

Kentucky-Tennessee 58
By Vern T. Whitney

Pennsylvania-West Virginia 60
By D. S. Wakenight

REFINING AND MARKETING

Strong Demand for Fuels Continues 22
By C. O. Willson
Fuel oils near peak price of past four years in Oklahoma. Heavy demand for all grades of distillates. Better tone in gasolines.

Refinery Runs Show Small Decrease 23
By C. O. Willson
Total crude throughput of Mid-Continent stills on January 1, was 10,675 barrels less than on December 1. Demand for crude exceeds supply.

Refined and Crude Prices 26-27

Tank Wagon Quotations 30

Refining and Marketing News 88

Fuel Oil and Coal Prices Closely Related 88

Chicago Distillate Demand Great 92
By J. B. Waldo

Eastern Refined Markets Firm 94
By N. O. Fanning

ARTICLES OF GENERAL INTEREST

The Advertisers Index 17

Men Known in Oildom and Personals 32

Natural Gas Developments 62

Value of Natural Gas Industry 62
By Col. R. B. Harkness

John B. Corrin on Outlook 62

Ohio's Gas Output Declines 62

Equipment and Supplies 64

Good Oil Country Prospects in Steel Trade 64
By B. E. V. Luty

Geological Survey Report on Crude Production for November 72

Classified Want Advertisements 100-101

Detailed Operations in Western Fields, December 129

Crude Petroleum Statistics 138

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Oklahoma Output Shows Big Decline

Average daily production in United States week ended Jan. 3, 1,911,730 bbls. Loss from previous week, 17,811 bbls.

Production of All Fields of Country Has Decreased 45,453 Bbls. Daily in Three Weeks Despite Wortham

Highest daily average estimated production last year, week ended August 23, 2,057,319 bbls. Lowest January 12, 1,871,143 bbls.

By Andrew M. Rowley

Another big drop in the crude production of Oklahoma during the past week, averaging 22,000 barrels a day and making a total decline of 53,535 barrels a day during the past three weeks, just about offset the gain registered in the output of the Wortham Field with the result there was only a decrease of 2,096 barrels a day in the estimated production of the entire Mid-Continent area although the decline for all fields of the United States totaled 17,811 barrels. As during the previous week, weather conditions were responsible for the large decrease in production, this being true in areas outside of Oklahoma, also.

With the advent of warmer weather towards the close of last week and the completion of a number of big wells in the Wortham Field, it seems now as if the decline in production has at least been chacked. Wortham went over the 100,000-barrel-a-day mark on Sunday of this week, the output of the new Texas Field for the 24 hours ending Monday morning being 106,000 barrels. This was an increase of nearly 20,000 barrels over the production of the field for the previous 24 hours. Consequently, a substantial increase in the average production of the field during this week, as compared to last, may be expected and it seems probable this increase will counterbalance any losses in other areas with the result production may be expected to start to climb again during this week.

Operators have good reason to be optimistic at this time regarding the trend of production. During the past three weeks the estimated production for all fields of the United States has declined 45,453 barrels a day despite the fact Wortham has shown an increase during that time of 68,700 barrels. In other words, if Wortham had not been discovered, crude production last week would have been 37,413 barrels a day less than the lowest estimated average for all of 1924. Of course, the unusually severe weather of the past three weeks was the real reason for the big drop in output and one of the main factors in causing Oklahoma's production to decline 53,535 barrels a day. Warmer weather will result in regaining some of this production which was lost. At the same time, the decline in production, regardless of the cause, has more than offset the gains due to Wortham, and such relief, even though it be but temporary, will count in the long run in the amount of oil above ground and available for markets.

In addition there now seems to be reason for the belief the main producing area of the Wortham Field will not be as large as some had expected it to be. The failure of the Mutual Oil Company's No. 1 Mrs. J. J. Manning narrows the field and, consequently, lessens the probable ultimate production and peak of output. This will go a long way towards improving the general situation.

It will be but a short time until the extent of Wortham will be fairly definitely known. Then it will be possible to estimate pretty closely just what may be expected of the field and when its peak will be reached and about what that peak will be. By that time the fields which have suffered most from the recent cold weather will have had a chance to show how much of the lost production they will regain. Then by the time the warmer weather of the spring permits full development in the fields where curtailment is necessitated during the winter, Wortham doubtless will have passed its peak and started on its decline.

All of which looks good and makes the operator feel optimistic and yet, at the same time, may be blasted by some wildcat operation opening a new producing area overnight. There is not any such area in sight right at this time, but that is no criterion as to what might develop in the oil business. Wortham is the most recent example of that. The discovery well there came in November 22 last and even with unusually cold weather which curtailed operations as much as 90 per cent, the field now is producing more than 100,000 barrels a day.

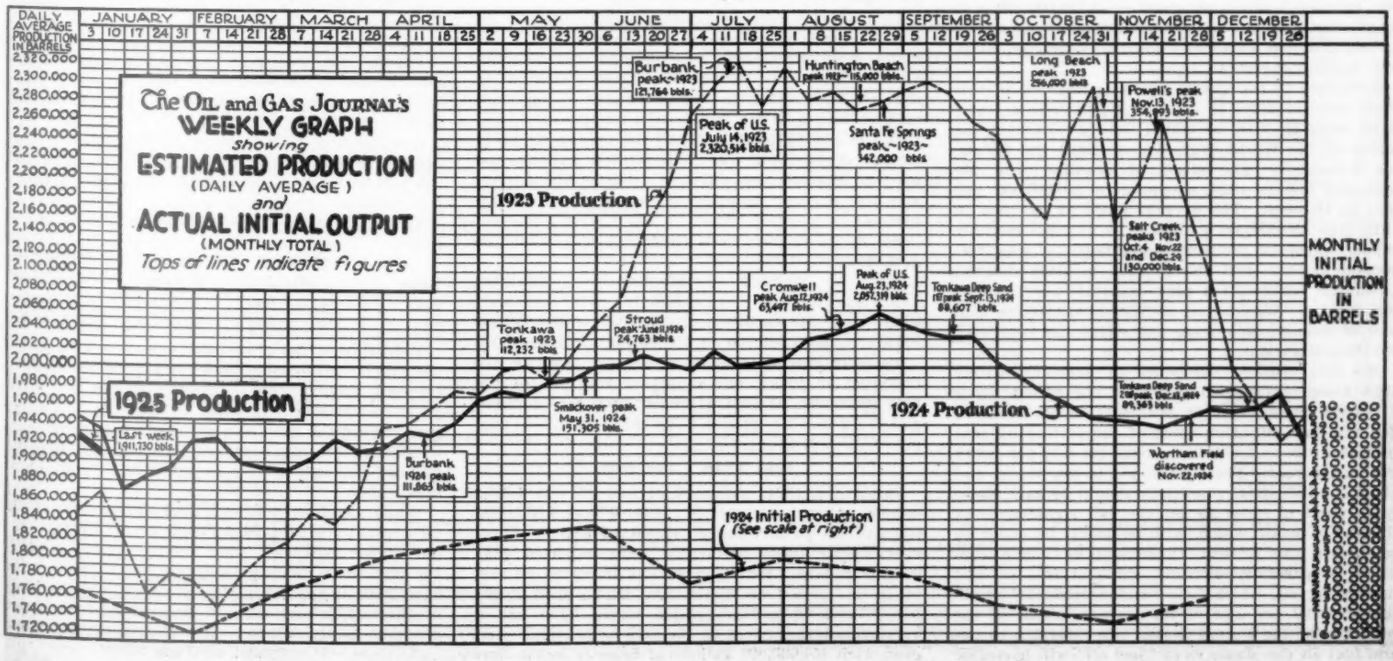
California showed a decline of 3,500 barrels daily last week, due to declines in the older fields of the State and at Long Beach. Dominguez showed a gain of 3,000 barrels. The Associated Oil Company again carried off completion honors there with a well which came in making 4,466 barrels of 30.1 gravity oil. In other main producing areas of the country, the weather continued to be a major factor in holding back development work, although the Louisiana-Arkansas territory reported a substantial gain in production. A new producing horizon is reported from the South Vernon Field in North Texas, resulting in activity there.

PRODUCTION IN THE UNITED STATES

Estimated daily average crude oil production in the United States for the week ended January 3, and a comparison with previous week follows:

Oklahoma—Northern Fields:	Jan. 3	Dec. 27
Tonkawa	96,030	99,415
Burbank	61,110	64,390
Other Osage Fields	36,550	39,325
Cushing and Shamrock	23,050	23,430
Bristow and Eastern Bristow	35,750	38,670
Cromwell	33,440	37,180
Papoose	29,670	29,770
Northern Miscellaneous	92,100	96 250
Southern Fields	65,400	66,670
Total Oklahoma	473,100	495,100
North Louisiana	49,250	49,346
Arkansas—		
El Dorado and Calion	10,380	10,460
Smackover Light	33,240	28,490
Smackover Heavy	63,270	63,835
Stephens and Nevada	3,285	3,290
Total Arkansas	110,175	106,075
North Central Texas	118,355	119,705
Powell	59,700	63,200
Mexia, Currie, Richland, etc.	42,050	42,850
Wortham	78,000	55,000
Kansas	81,050	82,500
Total Mid-Continent Area	1,011,680	1,013,776
Gulf Coast	72,165	75,500
Southwest Texas	46,215	46,135
Eastern	100,500	105,100
Rocky Mountain Area	69,170	73,530
California—		
Santa Fe Springs	51,000	51,000
Long Beach	124,000	127,000
Huntington Beach	40,000	39,500
Torrance	43,000	44,000
Dominguez	61,000	58,000
Remainder of State	293,000	296,000
Total California	612,000	615,500
Total United States	1,911,730	1,929,541

DECREASE, 17,811 BARRELS


DAILY AVERAGE PRODUCTION IN BARRELS
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
The Oil and Gas Journal's WEEKLY GRAPH showing ESTIMATED PRODUCTION (DAILY AVERAGE) and ACTUAL INITIAL OUTPUT (MONTHLY TOTAL)
Tops of lines indicate figures
1923 Production
1924 Production
1925 Production
1924 Initial Production (See scale at right)
Burbank peak-1923 121,764 bbls.
Peak of U.S. July 14, 1923 2,320,514 bbls.
Huntington Beach peak 1923-115,000 bbls.
Santa Fe Springs peak,-1923-142,000 bbls.
Long Beach peak 1923 256,000 bbls.
Powell's peak Nov.13, 1923 354,893 bbls.
Salt Creek peaks 1923 Oct.4 Nov.22 and Dec.29 130,000 bbls.
Tonkawa peak 1923 112,232 bbls.
Stroud peak June 1, 1924 124,763 bbls.
Cromwell peak, Aug.12,1924 63,497 bbls.
Peak of U.S. Aug.23,1924 2,057,319 bbls.
Tonkawa Deep Sand (1) Peak Sept.15,1924 88,607 bbls.
Smackover peak May 31, 1924 191,305 bbls.
Burbank 1924 peak 111,865 bbls.
Last week 1,911,730 bbls.
Tonkawa Deep Sand (2) Peak Dec.28,1924 89,369 bbls
Wortham Field discovered Nov. 22, 1924
MONTHLY INITIAL PRODUCTION IN BARRELS

Seven Year Survey of Refining Industry

So Well Balanced Annual Supply of Gasoline, Kerosene, Fuel Oil and Lubricating Oil Has Kept Within Two per cent of Demand

By Charles E. Bowles

If the gasoline which we produced and imported from January 1, 1918, to October 31, 1924, were loaded into 8,000-gallon tank cars, it would require 4,897,000 to hold it—39,181,000,000 gallons.

And if the gasoline which we consumed and exported in this period were loaded into tank cars it would require 4,805,000 to hold it —38,441,000,000 gallons.

In other words, in this 82-month period the supply of gasoline was only 92,000 tank cars more than the demand. The supply was less than 2 per cent greater than the demand.

On January 1, 1918, the stock of gasoline on hand was 412,000,000 gallons—on October 31, 1924, it was 1,152,000,000 gallons. This sounds large—but isn't, if the present tremendous volume of the industry is taken into consideration. Our present stock of gasoline would fill 144,000 tank cars—and this is the reserve supply for the entire United States and our foreign customers.

The demand (domestic consumption plus exports) for gasoline in August, September and October, 1924, averaged 3,550 cars a day, hence at this rate of consumption our stock on October 1 (144,000 cars) would have lasted less than 42 days. As our supply (domestic production plus imports) for August, September and October, 1924, averaged 3,118 cars a day—against an average demand of 3,550 cars—our storage stock (144,000 cars) served as a pretty good "bank account" from which to check out 432 cars a day.

Stock a "Bank Account"

If we had started the year 1924 without a gallon of gasoline in stock, our production and imports would have taken care of our consumption and exports and left 77,500,000 gallons to spare—and at the present rate of consumption this would have been less than three days' supply.

Or—if we had started 1924 without a gallon of gasoline in storage—and had imported none—our domestic production would have lacked 31,000,000 gallons of enabling us to meet our domestic and export requirements.

Viewed from this angle, isn't it rather obvious that our October 1 stock of gasoline—1,152,000,000 gallons—was a pretty safe "bank account," especially as our "current expenses" were so nearly equal to our "current income?"

Referring to the graph which is inserted in this book between pages 16 and 17 we note that it starts with January 1918, at which time we were in the midst of the World War, which ended the following November. The stock of gasoline was abnormally low in 1918, dropping to 250,000,000 gallons in October. The average stock of gasoline in 1918 was 386,000,000 gallons—the average monthly supply (domestic production plus imports) was 300,000,000 gallons—and the average monthly demand (domestic consumption plus exports) was 308,000,000 gallons. We started 1918 with 412,000,000 gallons of gasoline in storage and ended the year with 297,000,000 gallons.

We also reduced our stock of kerosene during 1918 about 117,000,000 gallons. We added about 81,000,000 gallons (or 14 per cent) to our stock of gas and fuel oil. Our stock of lubricating oil was increased about 2,000,000 gallons (or 1½ per cent) during the year. The background of low stocks and abnormal industrial conditions should be kept clearly in mind in order to get the full significance of the comparisons which will be made in order to emphasize the present fundamentally sound condition of gasoline, kerosene, gas and fuel oil and lubricating oil, which four "major products" represent over 90 per cent of the present output of the refineries of the United States. In referring to gas and fuel oil the single word "fuel oil" will hereafter be used and it will include both products. Also, the word "supply" will include domestic production and imports—the word "demand" will include domestic consumption and exports—and the words will be so used hereafter.

Comparing 1918 and 1924

Comparing gasoline in 1918 (a supply averaging 300,000,000 gallons a month, a demand averaging 308,000,000 gallons a month and an average stock of 386,000,000 gallons) with gasoline in the first 10 months of 1924 we find an average monthly supply of 750,000,000 gallons, an average monthly demand of 743,000,000 gallons and an average stock of 1,420,000,000 gallons.

Set up in tabular form these relations would be as follows:

Year	Monthly Stock	Monthly Supply	Monthly Demand
1918	386,000,000	300,000,000	308,000,000
1924	1,420,000,000	750,000,000	743,000,000

At the end of this 82-month period (January 1, 1918 to October 31, 1924) our stock of gasoline was about 3½ times as large as it was at the beginning—the average monthly supply was 2½ times as large—our average monthly demand was 2½ times as large.

Except for war conditions, the stock of gasoline January 1, 1918, would have been probably 500,000,000 gallons, which would have given about the same ratio (2½ to 1) that existed between the supply for two periods, also the demand.

On the graph, in the statistical summary marked "Gas Oil-Fuel Oil," we find that from January 1, 1918, to October 31, 1924, the supply was 68,485,000 gallons and the demand 67,451,000,000 gallons. The supply exceeded the demand by 1,034,000,000 gallons —or 1½ per cent.

Expressed in terms of 10,000-gallon tank cars, the supply was 6,848,000 cars and the demand 6,745,000 cars, which means that over this period of 82 months the supply of fuel oil was 103,000 cars more than the demand.

On January 1, 1918, the stock of fuel oil was 578,000,000 gallons. On October 31, 1924, it was 1,612,000,000 gallons—or enough to fill 161,200 tank cars—which is about 20,000 more tank cars than there are in the United States today.

In 1918 the average monthly supply of fuel oil was 610,000,000 gallons—the average monthly demand was 603,000,000 gallons—and the average monthly stock was 549,000,000 gallons, which means that in 1918, owing to war demands, we operated on less than a 30-day supply of fuel oil.

In the first 10 months of 1924 the average monthly supply of fuel oil was 1,159,000,000 gallons—the average monthly demand was 1,149,000,000 gallons and the average monthly stock was 1,567,000,000 gallons.

Set up in tabular form these relations would be as follows:

Year	Monthly Stock	Monthly Supply	Monthly Demand
1918	549,000,000	610,000,000	603,000,000
1924	1,567,000,000	1,159,000,000	1,149,000,000

To fully realize the narrow margin that we are traveling on today, our supply of fuel oil for the first 10 months of 1924 averaged 3,800 cars a day—and the demand averaged 3,768 cars—an excess supply of 32 cars a day.

Less Than 1 Per cent

January 1, 1924, our stock of fuel oil was 1,515,000,000 gallons. October 31, 1924, it was 1,612,000,000 gallons, an increase of 97,000,000 gallons. However, during these 10 months were imported 464,000,000 gallons. Hence, if we had imported no fuel oil in this period we would have drawn upon stocks for 367,000,000 gallons—which would have had a very stimulating effect on the fuel oil market. And even with 464,000,000 gallons of imports in the first 10 months of 1924, our supply of fuel oil was less than 1 per cent more than the demand.

The average daily demand for fuel oil during August, September and October 1924—38,400,000 gallons—would have used up the October 1 storage—1,612,000,000 gallons—in 42 days.

From January 1, 1918, to October 31, 1924, the supply of kerosene was 15,135,000,000 gallons and the demand 15,325,000 gallons. During this 82-month period the demand exceeded the supply by 190,000,000 gallons, hence the January 1, 1918 stock, 498,000,000 gallons, was reduced to 308,000,000 gallons on October 31, 1924.

In 1918 the average monthly supply was 152,000,000 gallons—the average monthly demand was 162,000,000 gallons—and the stock 405,000,000 gallons.

During the first 10 months of 1924 the supply averaged 205,000,000 gallons per month—the demand averaged 202,000,000 gallons—and the stock averaged 303,000,000 gallons.

In tabular form these relations would be as follows:

Year	Monthly Stock	Monthly Supply	Monthly Demand
1918	405,000,000	152,000,000	162,000,000
1924	303,000,000	205,000,000	202,000,000

Kerosene appears to be an "exception to the rule," as the present supply and demand are each substantially larger than in 1918, while the present average stock is 25 per cent lower than the average in 1918.

The graph indicates clearly the closeness with which the supply and demand lines for kerosene have traveled, from month to month, for the last seven years—and especially their closeness at the present time as compared with fuel oil, and more especially with gasoline. This closeness can also be visualized by saying that for the first 10 months of 1924 the supply of kerosene, reduced to 8,000-gallon cars, averaged 839 cars a day—and the demand 829 cars—an excess supply of only 10 cars a day, or lightly over 1 per cent.

Lubricating Oil

From January 1, 1918, to October 31, 1924, the supply of lubricating oil was 6,648,000,000 gallons and the demand 6,537,000,000 gallons. In this 82-month period the supply exceeded the demand by 111,000,000 gallons, or 1½ per cent. January 1, 1918, the stock was 137,000,000 gallons and on October 1, 1924, it was 248,000,000 gallons.

During the year 1918 the supply of lubricating oil averaged 70,000,000 gallons a month—the demand 70,000,000 gallons a month and the stock 144,000,000 gallons.

For the first 10 months of 1924 the supply averaged 96,000,000 gallons a month, the demand 95,000,000 gallons while the stock had increased to 247,000,000 gallons.

In tabular form these relations would be as follows:

Year	Monthly Stock	Monthly Supply	Monthly Demand
1918	144,000,000	70,000,000	70,000,000
1924	247,000,000	96,000,000	95,000,000

Referring to the graph, the closeness with which the supply and demand lines for lubricating oil have traveled, from month to month, for the last seven years, is amazing. In order to visualize this closeness during the first 10 months of 1924, the supply, in 8,000-gallon cars, averaged 392 cars a day and the demand 390 cars a day—a difference of two tank cars a day.

While gasoline, kerosene, fuel oil and lubricating oil account for over 90 per cent of the present output of our refineries, their relative growth, during the last seven years, has by no means been at the same rate as the graph clearly shows. On the basis of the supply and demand lines these four major products easily fall into two clearly defined groups

(Continued on Page 118)

Estimates of Oil Reserves Contrasted

Upward Revision Forced by Revelations of the Drill. Striking Changes in Calculations of Indicated Number of Years Supply

By L. M. Fanning

Scientific estimates of the oil reserves of the United States have been made from time to time. The first exhaustive estimate was made by Dr. David T. Day, then chief geologist of the United States Geological Survey, in 1908. Ralph Arnold, consulting geologist, compiled a report on reserves in 1914. The United States Geological Survey made an estimate in 1915, and Dr. David White, chief geologist of the United States Geological Survey, made one in 1918. The last official estimate was prepared in 1921 by a joint committee of the United States Geological Survey and the American Association of Petroleum Geologists.

The scant two full production years that have elapsed since the 1921 estimate have made striking changes in the indicated number of years' reserve for many States and for this reason comparison with the year's reserves based on 1921 production and based on 1923 production after deducting interim output, is given. As of the end of 1921 the supply amounted to 19 years reserve, while as of the end of 1923 it is reduced to 11 years.

Comparison of the various estimates (see Table 1) shows that, excepting the Day estimate, which gave wide latitude between minimum and maximum reserves, virtually every compilation revealed as much or greater quantities of petroleum in underground storage as shown in former estimates despite the heavy interim drain. For instance, the 1921 estimate gives 9,000,000,000 bbls. plus 130,000,000 bbls. "prospective," compared with 5,700,000,000 bbls. shown in the 1915 estimate, although in the intervening years 2,565,000,000 bbls. had been produced.

Modified by Drill

The temptation in considering estimates of petroleum reserves is to compare them after a lapse of a period of years to subsequent facts as demonstrated by that fickle but brutally frank instrument of fortune, the drill. This comparison reveals how strikingly incomplete some of the estimates have been.

Necessarily to be authoritative these expert calculations must be within the scope of geological and operating facts. The last estimate points out that the engineers have taken into consideration the general geologic formations—stratigraphy, geologic history, structure—the number, thickness, continuity and pore space of the sands, the curves of production, gas pressure, water relations and results of drilling in nearby and geologically similar regions, and that the criteria upon which estimates can be based vary in every degree of inadequacy in the different regions; the quality of the results, therefore, varying with the extent and character of the data available and with the personal equation of the estimators.

Improved Calculation

There cannot be much guesswork of an overoptimistic nature in a scientific estimate. To be sound it must be largely based on known fields and known condition in known fields. The upset usually lies in that inestimable factor: tomorrow's discoveries of new fields and new conditions in old and new fields. However, as pointed out in the last report, calculations of our oil reserves can be made with far greater completeness and accuracy than ever before because during the preceding eight years a large part of the territory in the United States that may possibly contain oil has been studied in great detail by geologists; wildcatting has spread through "prospective" into many regions of "possible" and locally into regions of "impossible" territory;

(Continued on Page 110)

TABLE NO. 1
Comparison of U. S. Oil Reserves as Shown by Various Estimates as of Date Made

Producing Fields—	End of 1908 (Day Estimate) Minimum	End of 1908 (Day Estimate) Maximum	End of 1914 (*Arnold Estimate)	End of 1915 (U.S.G.S. Estm.)	End of 1918 (U.S.G.S.-Dr. White Estm.)	End of 1921 (U.S.G.S.-Am. Asso. of Pet. Geologists)
	Bbls.	Bbls.	Bbls.	Bbls.	Bbls.	Bbls.
Eastern:						
Appalachian	1,027,904,277	4,027,904,277	.....	481,000,000	550,000,000	.....
Lima-Indiana	602,998,580	2,602,998,580	.....	31,000,000	40,000,000	.....
Illinois	287,447,079	937,447,079	.....	244,000,000	175,000,000	.....
Total Eastern	1,918,349,936	7,568,349,956	977,000,582	756,000,000	765,000,000	1,435,000,000
Mid-Continent	256,524,554	856,524,554	1,777,489,307	2,482,000,000	2,225,000,000	2,960,000,000
Gulf Coast	96,204,469	846,204,469	377,330,762	1,500,000,000	750,000,000	2,100,000,000
Rocky Mountain and others	990,605,785	4,990,605,785	1,331,279,908	546,000,000	750,000,000	675,000,000
California	4,753,179,438	8,253,179,438	1,299,999,441	2,345,000,000	2,250,000,000	1,850,000,000
Total	8,014,864,182	22,514,864,182	5,763,100,000	7,629,000,000	6,740,000,000	9,020,000,000
Prospective	.....	.....	.....	75,000,000	.....	.....
Total	8,014,864,182	22,514,864,182	5,763,100,000	7,704,000,000	6,740,000,000	9,150,000,000

*This report, by districts, is materially different in its results from Arnold's report by States for same year.

TABLE NO. 2
***Day Estimate of U. S. Resources (1908)**

MINIMUM PRODUCTION ESTIMATE

	Total Resources Bbls.	Production Through 1908 Bbls.	Pet. Remaining End of 1908 Bbls.	Prod. 1909-23 Inclusive Bbls.	Pet. Remaining End of 1923 Bbls.	Production Through 1923 in Excess of Est. Bbls.	Production 1923 Bbls.	No. Yrs. Reserve Based on '23 Prod.
Appalachian	2,000,000,000	972,095,723	1,027,904,277	397,464,778	630,439,499	.....	28,225,000	22
Lima-Indiana	1,000,000,000	397,001,420	602,998,580	65,110,664	537,887,916	.....	2,404,000	224
Illinois	350,000,000	62,552,921	287,447,079	289,546,459	.....	2,099,380	9,500,000	....
Mid-Continent	400,000,000	143,475,446	256,524,554	2,389,655,306	.....	2,133,130,752	348,460,000	....
Gulf	250,000,000	153,795,531	96,204,469	304,583,388	.....	208,378,919	33,271,000	....
California	5,000,000,000	246,820,562	4,753,179,438	1,586,691,014	3,166,488,424	.....	262,876,000	12
Minor fields	1,000,000,000	†9,394,215	990,605,785	171,082,292	819,523,493	.....	47,671,000	17
Total	10,000,000,000	.....	8,014,864,182	5,204,133,901	5,154,339,332	2,343,609,051	732,407,000	....

MAXIMUM PRODUCTION ESTIMATE

Appalachian	5,000,000,000	972,095,723	4,027,904,277	397,464,778	3,630,439,499	.....	28,225,000	129
Lima-Indiana	3,000,000,000	397,001,420	2,602,998,580	65,110,664	2,537,887,916	.....	2,404,000	1055
Illinois	1,000,000,000	62,552,921	937,447,079	289,546,459	647,900,620	.....	9,500,000	68
Mid-Continent	1,000,000,000	143,475,446	856,524,554	2,389,655,306	.....	1,533,130,752	348,460,000	....
Gulf	1,000,000,000	153,795,531	846,204,469	304,583,388	541,621,081	.....	33,271,000	16
California	8,500,000,000	246,820,562	8,253,179,438	1,586,691,014	6,666,488,424	.....	262,876,000	25
Minor fields	5,000,000,000	†9,394,215	4,990,605,785	171,082,292	4,819,523,493	.....	47,671,000	100
Total	24,500,000,000	.....	22,514,864,182	5,204,133,901	18,843,861,033	1,533,130,752	732,407,000	....

*U. S. Geological Survey Bulletin 394, "Conservation of Mineral Resources," February, 1909, by Dr. David T. Day, then Chief Geologist, U. S. Geological Survey. †Includes Rocky Mountain.

TABLE NO. 3
***Arnold Estimate of U. S. Oil Resources (1914)**
****BY DISTRICTS**

	Total Resources Bbls.	Production Through 1914 Bbls.	Pet. Remaining End of 1914 Bbls.	Prod. 1915-23 Inclusive Bbls.	Pet. Remaining End of 1923 Bbls.	Production Through 1923 in Excess of Est. Bbls.	Production 1923 Bbls.	No. Yrs. Reserve Based on '21 Prod.
Appalachian	1,729,809,000	1,125,635,327	.....	.....	.....	.....	.....	....
Lima-Indiana	406,286,000	†433,459,475	.....	.....	.....	.....	.....	....
Illinois	632,327,000	232,326,616	.....	.....	.....	.....	.....	....
Total Eastern	2,768,422,000	1,791,421,418	977,000,582	392,350,547	574,650,035	.....	40,129,000	14
Mid-Continent	2,346,000,000	568,510,693	1,777,489,307	1,964,620,059	.....	187,130,752	348,460,000	....
Gulf	592,895,433	215,564,671	377,330,762	242,814,248	134,516,514	.....	33,271,000	4
California	2,041,273,000	741,273,559	1,299,999,441	1,092,238,017	207,761,424	.....	262,876,000	1
Minor fields	1,349,966,707	‡18,686,799	‡1,331,279,908	‡161,789,708	‡1,169,490,200	.....	47,671,000	25
Total	9,098,557,140	3,335,457,140	5,763,100,000	3,853,812,579	2,086,418,173	187,130,752	732,407,000	....

**Intended as revision of Dr. Day's 1908 estimate in view of the opening up of new fields. †O. K. ‡Includes Rocky Mountain.

BY STATES

Arkansas	.....	59,512,000	.....	59,512,000	36,610,000	....
California	2,300,000,000	1,092,238,000	1,207,762,000	.....	262,876,000	5
Colorado	21,000,000	1,221,427	19,778,573	.....	86,000	229
Illinois	400,000,000	117,240,764	282,759,236	.....	8,707,000	33
Indiana	20,000,000	8,436,664	11,563,336	.....	1,043,000	11
Kansas	40,000,000	259,589,896	.....	219,589,896	28,250,000	....
Kentucky-Tennessee	10,000,000	53,059,290	.....	43,059,290	8,077,000	....
Louisiana	170,000,000	198,916,478	.....	28,916,478	24,919,000	....
Michigan, Missouri, Alaska	10,100,000	†71,213	9,028,787	.....	.....	....
New York	135,000,000	61,121,176	63,878,824	.....	1,250,000	51
Ohio	205,000,000	66,304,150	138,695,850	.....	7,085,000	19
Oklahoma	1,545,000,000	1,030,649,309	514,350,691	.....	160,929,000	3
Texas	400,000,000	658,766,624	.....	258,766,624	131,023,000	....
West Virginia	207,000,000	71,154,503	125,845,497	.....	6,358,000	20
Wyoming	300,000,000	153,226,429	146,773,571	.....	44,785,000	3
Montana	.....	7,270,639	.....	7,270,639	2,782,000	....

*"Petroleum Resources of the U. S.," by Ralph Arnolds, consulting geologist, published in Economic Geology, December issue, 1915.
**No figures. †Also New Mexico.

TABLE NO. 4
***United States Geological Survey Estimate of United States Oil Resources (1915)**

Producing districts—	Petroleum remaining end of 1915 Barrels	Production 1916-1923 inclusive Barrels	Petroleum remaining end of 1923 Barrels	Production through 1923 in excess of estimate Barrels	Production 1923 Barrels	Number of years reserve based on 1923 Production
Appalachian	481,000,000	221,065,126	259,934,874	.....	28,225,000	9
Lima-Indiana	31,000,000	24,383,018	6,616,982	.....	2,404,000	3
Illinois	244,000,000	§100,731,069	143,268,931	.....	9,500,000	15
Mid-Continent—						
Oklahoma-Kansas	1,874,000,000	1,189,500,475	684,499,525	.....	189,179,000	3
North Texas	484,000,000	430,263,263	53,736,737	.....	100,262,000	.5
North Louisiana	124,000,000	‡225,759,004	.....	101,759,004	59,079,000	
Total Mid-Continent	2,482,000,000	1,845,522,742	738,236,262	101,759,004	348,460,000	
Gulf Coast	1,500,000,000	222,235,593	1,277,764,407	.....	33,271,000	38
Rocky Mountain—						
Colorado	6,000,000	1,002,962	4,997,038	.....	86,000	58
Wyoming and Montana	540,000,000	156,261,543	383,738,457	.....	47,567,000	8
Total Rocky Mountain	546,000,000	157,264,505	388,735,495	.....	47,653,000	
California	2,345,000,000	1,005,646,482	1,339,353,518	.....	262,876,000	5
Total	7,629,000,000	3,576,848,535	4,153,910,469	101,759,004	¶732,389,000	
†Potential districts	75,000,000					
Total	7,704,000,000					

†Alaska, Arizona, Utah, New Mexico, Michigan, Arkansas, Alabama, Nebraska, Washington and Mississippi. ‡Includes Arkansas, although Arkansas reserves grouped with potential districts. §Includes southwest Indiana. ¶Excluding "other" fields amounting to 18,000 bbls. *Senate Document No. 316.

Strong Demand for Fuels Continues

Fuel Oils Near Peak Price of Past Four Years in Oklahoma. Heavy Demand for All Grades of Distillates. Better Tone in Gasolines

By C. O. Willson

Considered as a whole, developments in refined markets in Group 3 (Oklahoma) the first week of the new year were very favorable from the viewpoint of the manufacturer. Several grades of products used as fuel again advanced and the remainder held to the advances of the previous two weeks. In addition, the bearish predictions regarding all grades of motor fuel have as yet failed to materialize. The higher gravity gasolines are in fact slightly higher than they were a week ago with a more optimistic feeling existing among the sellers regarding the probable market trend over the remainder of the month.

Kerosenes are apparently on the verge of an upward price trend due to a decrease in the volume of offers brought about by the heavy demand for distillates. All grades of natural gasolines have been able to hold their own and Grades C and A are ¼-cent higher than they were the last week of December, due to the purchases of large buyers. Lubricating oils are still slow but in the generally optimistic feeling which has pervaded the Group 3 market during the past week even the manufacturers of neutrals and cylinder stocks were inclined to feel that a better demand was just around the corner.

With sales of 24-26 degrees gravity fuel oil made at $1.30, the present fuel oil market in Group 3 on all grades is higher than at any time since early in 1921, with the exception of a short period in August of 1922 when prices were approximately 5 cents higher than they are now. Crude oil prices were higher during the brief period of peak fuel oil quotations in 1922 than they are at the present time, so it can now be said that the average Oklahoma refiner is securing relatively more for his fuel output than at any time since the post war adjustment period ended in the early months of 1921. This situation is further emphasized when it is considered that distillate prices are higher than at any time during the past three and one-half years.

Record Distillate Consumption

This unusual situation in regard to fuel oil and distillates has come as a surprise to many of the trade. A record distillate consumption has been heralded for many months although it did not materialize until the cold weather of three weeks ago and fuel oils have been generally strong since early fall. However, it was not generally expected that prices would advance to their present levels without the aid of an advance in Mid-Continent posted crude schedules.

The present situation has naturally led to discussions whether the recent spurt in prices was based on fundamental conditions having to do with supply and demand. With a majority of the trade agreeing that a general advance in posted crude schedules is assured for the near future, there is the additional factor to consider whether or not fuel oils and distillates will be in a position to reflect these increased costs in raw material with still higher prices at the refineries.

A few of the trade at least take the position that present fuel oil and distillate prices are all the traffic will bear, declaring that refiners must expect to offset any increase in posted crude schedules with greater revenue from their gasoline output. This attitude is based on the contention that fuel oil and distillate consumers will return to the use of coal or other fuels if prices are further advanced. As usual, when fuel oil prices are advanced this threat has been heard from consumers recently, although the complaints have come mainly from the eastern areas where prices are always higher than they are in the Mid-Continent and Middle West.

Relative Value of Fuels

What little data there are available in the Mid-Continent Field in regard to the relative value of fuel oil and coal varies so in conclusions drawn that it is confusing. On page 88 of this issue will be found a table compiled by the statistical department of the Western Petroleum Refiners Association which gives some light on this much discussed question for the entire United States. However, since it is based on average fuel oil and coal prices for the entire United States it is of little value in a discussion confined to relative values of the Mid-Continent Field.

One sales manager whose company has gathered considerable data regarding this matter does not believe that either fuel or distillate prices have reached the point where coal and other fuel substitutes represent a serious competitive menace. He says that undoubtedly there are a few consumers who could more profitably use coal at the present time. This concern, in fact, in its investigations, has found out that there are consumers who have never been justified in using fuel oil, but nevertheless have persisted in doing so regardless of cost. This sales manager also points out that the present spot market does not represent prices paid by a majority of the large users who buy on long time contracts based on the posted crude schedules. At the present time, these contracts are netting the refiner less than $1 a barrel in most instances.

Talk of $1.50

The concern just mentioned, after taking into consideration all the advantages of fuel oil over coal, believes that fuel oil in Oklahoma can advance to $1.50 a barrel f.o.b. Oklahoma refinery before the demand will be materially lessened through the substitution of coal. As previously indicated, others who have expressed themselves believe that present prices, if continued for any length of time, will check consumption while some believe the price can be advanced to as high as $2 a barrel.

In regard to distillates there is a general agreement among refiners that they must get at least 4 cents for their output and more if crude prices are advanced during the winter season of maximum consumption. Refiners in this area have never taken kindly to the attitude of many jobbers and oil burner manufacturers who have told their customers that the refiners could make a distillate which as fuel would be cheaper than coal. Supporting this position of the refiners is the fact that several refiners in this area refused to become interested in the manufacture of distillate until prices had passed the 3½-cent level. This, of course, applies to the open market, greater concessions being given to buyers who are willing to take long time contracts which protect the refiner in the seasonal fluctuations reflected in the ups and downs of the open market.

Statistical Position

Much has been said and written recently regarding the statistical position of fuel oil and distillates. The accompanying graph shows the stock trend which in turn reflects the industry's position in regard to supply and demand and explains the gradual price advances of the past few months which have spread to all areas except the West Coast. The graph shows a gradual increase in stocks for the 22-month period ending October 31, 1924. Starting with 1,265,074,722 bbls. in January, 1923, stocks had increased to 1,611,585,894 bbls. by October 31 of last year. This represents an increase of 346,511,172 bbls. As shown in the graph all of this increase is more than accounted for in the increased stocks of the West Coast. The fuel oil, gas oil, and distillate stocks in California or West Coast increased from 348,857,986 bbls. on January 31, 1923, to 774,127,958 bbls. on October 31, 1924, an increase of 425,269,972 bbls. for the 22 months. This has meant that total stocks for the remainder of the United States are 78,758,808 bbls. less for the same period.

The West Coast has been able to maintain relatively firm fuel oil prices despite the large increase in stocks. This is due to the fact that coal does not enter as a competitor in that area as it does in the territory east of and including the Rocky Mountains. Refiners have not hesitated to store their excess fuel oil, believing that there would be a demand for it as soon as the crude oil production began to decline.

During 1923 and a large part of 1924 consumers in the East were able to buy large quantities from the California refiners. During the past few months, however, this source of supply has been partially cut off, forcing the eastern buyers once more to look to look to their own territory for their requirements. They have found the refiners east of the West Coast with less stocks on hand than they had two years ago with a substantial increase in consumption in all sections of the country.

Factors in Advance

Higher prices were the inevitable development of this situation. In addition to the declining stocks and increased consumption east of California, there is the adidtional factor that the percentage of fuel oil output is steadily declining. The percentage of fuel oil output in relation to crude runs to stills for the first nine months of 1923 was 48.5 per cent and for the same period of 1924, 47.1 per cent. Another development, the full effect of which is just beginning to be felt, is the rapidly expanding consumption of fuel distillates which are included in the Government reports with fuel and gas oil. Just how rapid this consumption is not known but recent market developments indicate it has already added largely to the value of crude petroleum as a fuel.

(Continued on Page 30)

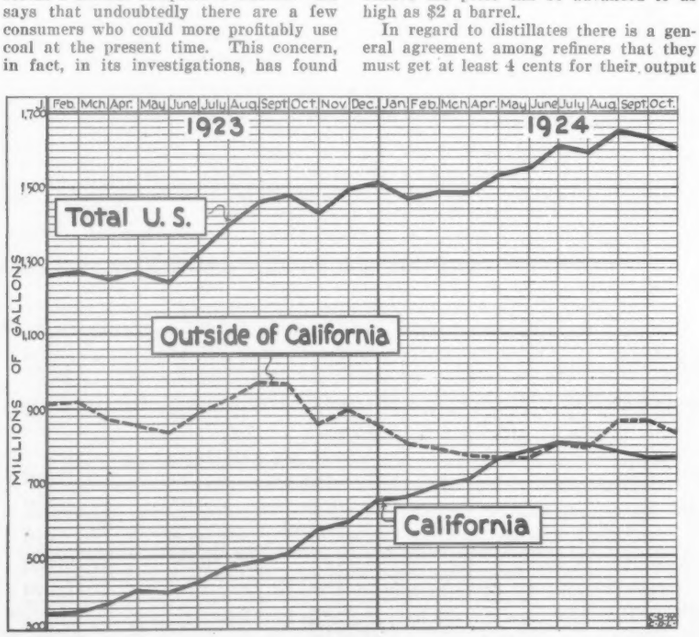


Diagram showing fuel oil stocks in United States, California and the remainder of the United States based on Bureau of Mines reports.

REFINED MARKET BAROMETER

The downward price trend in motor fuels was checked in practically all refining areas during the past week. The domestic demand has improved in some sections since the weather moderated following the storms of the previous week and other refining areas have been aided with export purchases. An additional factor in the gasoline market is the expectation of higher crude prices which has caused many refiners to store their surplus rather than lower their prices. Fuel oil and distillates continue as the strong feature of the refined market, prices being advanced wherever changes were made. The domestic demand for kerosenes has improved and prices are slightly higher in a few refining areas. Lubricating oils are spotted, reports indicating a demand which varies from slow to strong. Wax is strong.

Mid-Continent—Fuel oil, gas oil and distillate strong and prices generally higher. Improved demand for gasolines especially in North Texas, where prices are generally higher. All grades of natural gasolines either firm or higher than last week. Better tone in kerosene market in Oklahoma, Kansas and North Texas. Lubricating oils slow.

Atlantic Seaboard—Market generally firm. Strong demand for crude at refineries indicated in receipts from Gulf Coast. Export market favorable with shipments from New York during December near record month in history of port. No changes in export prices.

Pennsylvania—Recent crude advances preventing lower gasoline prices. Fair demand for kerosene. No changes in lubs. Strong demand for wax.

California—Strong demand for natural gasolines continues to feature market. Lubs and kerosene dull. No changes in other products.

Chicago—Strong demand for fuel oil and distillates. Slow transportation aiding gasolines. Better demand for kerosenes.

Refinery Runs Show Small Decrease

Total Crude Throughput of Mid-Continent Stills on Jan. 1 Was 10,675 Barrels Less Than on Dec. 1. Demand for Crude Exceeds the Supply

By C. O. Willson

With four less refineries operating, total Mid-Continent refinery runs on the opening day of the new year receded slightly from the peak operating status of December 1, 1924, when they were handling more crude oil than any previous period in their history. Crude runs to stills on January 1, totaled 372,535 bbls., or 10,675 bbls. less than the 383,210-bbl. total on December 1. This decrease of less than 3 per cent is only partially accounted for by the four shutdowns during the past month, all of which with one exception were small plants which are of little importance in total refinery operations. The one exception was the plant of the Iowa Park Producing & Refining Co., located at Iowa Park, Texas. This plant suffered a severe fire in December and will not be operated during January. The plant, which was handling 1,700 bbls. of crude oil daily the first of December, is to be rebuilt and will probably resume operations some time in February.

The January report does not include the runs of the Bell Oil & Gas Co. plant located at Grandfield, Okla. This plant was shut down on the first day of the month but has since started operating, according to an announcement of officials of the company, at its capacity of 3,000 bbls. daily. The plant formerly known as the Twin-Six Refining Co. was recently purchased by its present owners. The crude supply is being obtained from the North Texas fields.

All areas, with the exception of Arkansas showed a slight decrease when compared with the December 1 report. This amounted to 5,885 bbls. in the case of Oklahoma, North Central Texas, 2,010 bbls.; Kansas, 925 bbls.; and North Louisiana, 2,500 bbls. with a 645-bbl. increase in Arkansas. During the extremely cold weather which prevailed the latter half of December several plants reduced their operations, but in most instances the decrease was temporary and in a majority of cases refiners expect to refine as much crude in January as they did in December.

Crude Production Drop

Crude oil production of Mid-Continent fields also dropped from an estimated total of 1,039,501 bbls. daily for the first week in December to 1,011,680 bbls. for the first week in January. Due to this fact, Mid-Continent refiners on January 1 were running 36.9 per cent of all crude produced in the same area as against 36.8 per cent on December 1.

These percentages reflect the tight crude oil situation which has existed in the Mid-Continent Field for several weeks and which in the past has brought advances in crude price schedules posted by the major purchasing companies. The failure of advances to materialize up to this time is usually explained as a development of the bringing in of the new Wortham Pool in Texas the latter part of November.

Mid-Continent refiners with few exceptions have maintained their relatively heavy crude runs to stills despite a slump in gasoline prices which during the month of December totaled 1 to 1½ cents a gallon on all grades. This situation can be explained by the fact that the bull movement in gasolines of early December has been supplanted with a similar price trend in fuel oils and distillates which started the latter half of the month. Average fuel oil prices in all sections of the Mid-Continent on January 1 were from 10 to 20 cents a barrel higher than on December 1. The distillate price advance during the past month has totaled approximately ½-cent a gallon. Prices on other products developed no important changes.

MID-CONTINENT REFINERY OPERATIONS

Table No. 1

(Based on plants which have been in operation during the past year.)

	No. Plants Jan. 1,'25	Capacities Jan. 1,'25	Plants Op Jan. 1,'25	Dy. Runs Jan. 1,'25
Oklahoma	58	260,200	48	167,115
North Central Texas	46	165,750	39	86,275
*Kansas	27	135,300	22	78,000
North Louisiana	8	37,300	6	26,600
Arkansas	15	36,950	8	14,545
Total	153	635,500	123	372,535

*Includes three Missouri plants.

Table No. 2

Based on operations of all plants as of December 1, 1924, and November 1, 1924. (Capacities includes all plants regardless of how long they have been shut down.)

	No. Plants Jan. 1,'25	Capacities Jan. 1,'25	Plants Op. Jan. 1,'25	Dy. Runs Jan. 1,'25	Plants Op. Dec. 1,'24	Dy. Runs Dec. 1,'24	Dy. Dec. Jan. 1,'25
Oklahoma	103	359,600	48	167,115	52	173,000	5,885
North Cent. Texas	73	242,350	39	86,275	40	88,285	2,010
†Kansas	39	149,600	22	78,000	21	78,925	925
North Louisiana	17	48,580	6	26,000	6	29,100	2,500
Arkansas	16	44,950	8	14,545	8	13,900	*645
Total	248	845,080	123	372,535	127	383,210	10,675

†Includes four Missouri plants. *Increase.

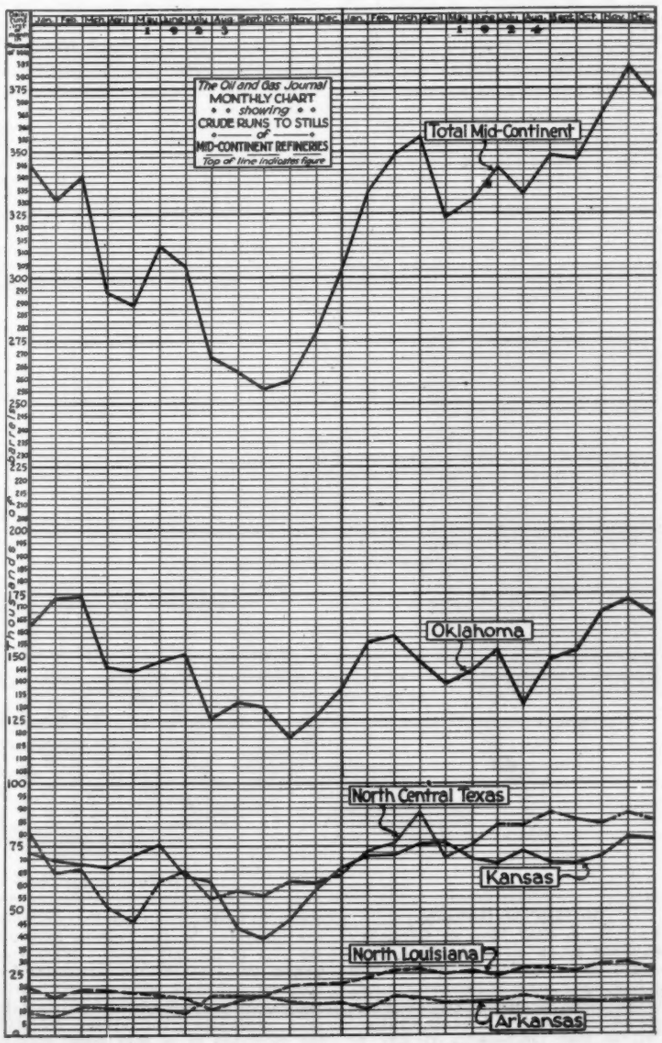
Table No. 3

(Based on operations of all plants as of December 1, 1924, and December 1, 1923.)

	No. Plants Jan. 1,'24	Capacities Jan. 1,'24	Plants Op. Jan. 1,'24	Dy. Runs Jan. 1,'24	Dy. Inc. Jan. 1,'25
Oklahoma	108	369,000	50	137,575	29,540
North Central Texas	70	217,350	32	64,350	21,925
*Kansas	42	131,100	22	66,800	11,200
North Louisiana	19	48,950	5	21,250	5,350
Arkansas	17	37,950	7	13,250	1,295
Total	257	804,350	116	303,225	69,310

*Includes four Missouri plants.

This strong demand for fuel oils and distillates has kept many refiners operating near capacity which otherwise would have reduced their operations when cold weather brought a slump in gasoline consumption and a general lowering of prices.



The outlook for fuels is favorable over the month of January and it is probable that the operating status of January 1 will be continued over the month.

As shown in Table 3, Mid-Continent refiners on January 1, 1925 were running 69,310 bbls. more crude oil to stills than on the same date of last year. Although this represents an increase of approximately 22 per cent for the year, the daily crude runs are closer together than during any year to year comparison for several months. On December 1 crude runs to stills were 104,445 bbls. greater than on the same date of 1923. As shown in the accompanying graph crude runs to stills were increasing rapidly at this time last year and the February report will probably show a still closer relationship.

Oklahoma

There were three shutdowns of small plants in Oklahoma during the month. These were the plants of the Coleman-Nelson Corp. at West Tulsa; Lawton Refining Co. at Lawton and the Whaleback Production Co.'s plant at Oklahoma City. These shutdowns are said to be temporary. Only minor changes occurred in the operations of the remaining plants. Cosden & Co. is still running around 30,000 bbls. of crude oil daily. The Tidal plant at Drumright has returned to its normal operations of around 4,500 bbls. daily after averaging 2,000 bbls. over December. The Globe Oil & Refining Co. has increased its runs from 4,000 to 4,500 bbls. daily.

The crude situation has tightened considerably during the past two or three weeks and refiners seeking new supplies have found them practically impossible to obtain except through the payment of large premiums. Many refiners have suffered from the fact that production in Oklahoma has dropped approximately 53,000 bbls. daily during the past three weeks. This was largely due to the cold weather and part of this loss will come back with the advent of warmer weather. With no new pools in sight, Oklahoma refiners are, however, probably faced with a declining crude supply for the immediate future at least.

North Central Texas

Outside of the shutdown of the Iowa Park Producing & Refining Co. plant at Iowa Park previously mentioned there were no important changes in North Central Texas refinery operations. At Wichita Falls, the Orient Refining Co. is completing additional units to its plant which will increase its capacity to 2,500 bbls. by February 1. The Paris Refining Co. at Paris has been reorganized and its small plant at Paris is now operating under the management of M. H. Baughn. The plant of the Gulf Refining Co. at Fort Worth was shut down part of December but was operating again the first of the year.

Kansas

In Kansas, the Sinclair Refining Co. has lowered its crude runs to stills at both Argentine and Coffeyville. The runs of the Skelly Oil Co. at El Dorado were reduced from 7,500 bbls. to 6,500 bbls. An important addition to the list of operating plants in the near future will be that of the Waite Phillips Co. plant at Wichita. This plant recently purchased from the Sterling Oil & Refining Co., has been made ready to operate and will start as soon as a pipe line connection with the Rainbow Bend Pool is completed some time this month.

North Louisiana

In North Louisiana, the Caddo Central Oil & Refining Co. has reduced the runs of its two plants from 8,500 bbls. to 7,500 bbls. daily. The plant of the Great

(Continued on Page 120)

Germany's Efforts to Find Oil Pools

Chief of the Geological Department of the Deutsche Bank Details Past and Present Operations in Search for Petroleum

By Dr. L. Sommermeier
Geological Department of the Deutsche Petroleum-Aktien-Gesellschaft of Berlin

It is well known that amongst the oil producing countries Germany figures on a very low scale participating in the world's production with about 0.03 per cent and only one-tenth of her consumption of petroleum and its derivates is covered by her own production. Formerly these relations have been more favorable but one has become used to consider Germany's small production as a natural and unchangeable fact. Consequently it has been tried in the last few years with increased energy to find a compensation by distilling coal and bituminous shale. However, in the past two years drilling operations have been much revived, to raise the production of old fields or to open new ones so there has been a new improvement of Germany's oil production. But this does not mean yet the beginning of an absolute rise of production, because of the loss of Alsatia. Furthermore, since the height of production in 1910, the production of the remaining oil fields, especially the fields of the province of Hanover, has decreased.

Alsatia
Total Oil Production

Year—	Tons	Year—	Tons
1875	742	1907	26,124
1880	1,053	1908	28,898
1885	3,086	1909	29,726
1886	7,689	1910	34,172
1890	14,977	1911	44,348
1895	16,439	1912	47,000
1900	22,586	1913	49,584
1901	19,997	1914	49,055
1902	20,205	1915	43,176
1903	20,947	1916	41,291
1904	22,016	1917	46,911
1905	21,128	1918	51,194
1906	22,154		

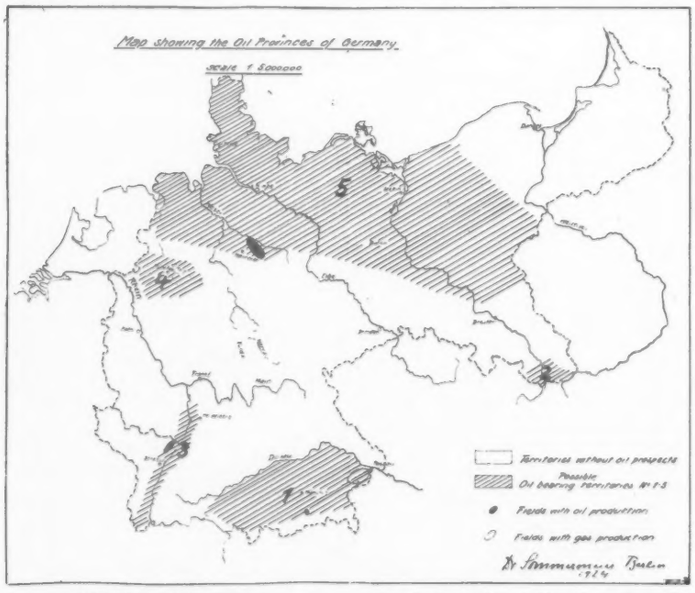
The first drilling operations in Germany were undertaken in 1859. Until 1918 there may have been completed—including Alsatia—about 4,000 wells or some 100 more. The production of the first 20 years was of no importance. As shown by the table published beginning with 1880, when the first 1,000 tons was surpassed, there were some remarkable phases in development. Up to 1899 there was a more or less continued increase. In 1900 the production almost doubled that of the preceding year—50,000 tons the same height as at the end of 1923. This quick rise was especially due to the strong revival of Wietze in Hanover where a horizon of light oil not known before was discovered. At that time Wietze's production rose from 2,500 to 27,000 tons. The remainder of Germany's total production, which had been so much increased by that discovery, came principally from Alsatia, which in those years had a rather unchanged production of about 20,000 tons. In 1907, after 81,000 tons in 1906, there rsealted a production of 106,000 tons, another remarkable phase. This rise of 25,000 tons was also due to Wietze. It is interesting to remember these figures when thinking of the production probably shown by the present year compared with the past two years, owing to some new wells at Nienhagen in Hanover. The height of German oil production was reached in 1909 and 1910 with 145,000 tons, 110,000 tons of which were due to the oil industry in Hanover. The next phase is 1915 where as a consequence of the begining of the war production sank again below 100,000 tons; finally there must be mentioned the stage between the years 1918 and 1919, where Germany's oil production was reduced by the loss of Pechelbronn in Alsatia. If we see again a rise of production and if there may be reckoned upon 60,000 or 70,000 tons a year this only signifies the same thing Germany experienced twice—in 1900 and 1908—in the former center of her oil industry. However, this time the rise of production was due to a considerable increase of single wells.

Total Raw Oil Production
Germany

Year—	Tons	Year—	Tons
1875	781	1901	44,095
1880	1,309	1902	49,725
1881	4,108	1903	62,680
1882	8,158	1904	89,620
1883	3,755	1905	78,869
1884	6,490	1906	81,350
1885	5,815	1907	106,379
1886	10,385	1908	141,900
1887	10,444	1910	145,000
1888	11,920	1911	143,000
1889	9,591	1912	135,000
1890	15,226	1913	121,000
1891	15,315	1914	110,000
1892	14,257	1915	99,000
1893	13,975	1916	93,000
1894	17,232	1917	91,000
1895	17,051	1918	90,000
1896	20,395	1919	38,000
1897	22,302	1920	35,000
1898	25,789	1921	38,000
1899	27,027	1922	45,000
1900	50,375	1923	50,000

Total Production

The total oil production in Germany since the beginning of drilling operations may be figured at 2,250,000 tons. The figures existing are not dependable enough for more exactitude and furthermore they include Alsatian wells, eliminated since 1919. The last yearly production of 50,000 tons resulted from an average of about 80 to 100 tons per well and year. Even if this figure should not be quite exact it signifies the generally small result of single wells in Germany. In former years there have been considerable exceptions in the best productive districts, notably the sensation made last spring by a gusher which came in at Nienhagen with an initial production of about 300 tons daily, as well as by some other wells in the past and the preceding year in the same district also surpassing the usual amount of single wells. The present rise of production must be valued quite differently from that observed in the table of production, so it would be right to revise the conclusion on the possibilities of oil production in Germany and be prepared for surprises which might result.


Map showing the Oil Provinces of Germany.
Scale 1 500000
Territories without oil prospects
Possible
Oil bearing territories Nr 1-5
Fields with oil production
Fields with gas production

Oil Map of Germany

To form a clear idea on Germany's possibilties as an oil producing country it might be interesting to realize which and how many parts of the country may be considered as oil bearing, in which parts oil showings will be encountered at all so that theoretically it may be expected to find commercial oil deposits. For this purpose the accompanying map of the German oil districts has been drawn. Before considering in detail the five oil provinces he who compares this sketch with the geological map of Germany will see at once that on the whole in the middle of Germany the crystalline rocks and palaeozoic sediments of the old variscic chains of mountains as well as the areas of the mesozoic strata in Southern Hanover, Hessen Thuringen and in Southern Germany are indicated as not oil bearing parts. These territories are not perfectly bare of oil showings. In the mountain region of Southern Hanover, there are asphalt deposits being exploited and at some other places there are known showings of oil, asphalt and gas. For this reason one may express the opinion—and some geologists do so—that in these parts of Germany also oil production may be expected. But these districts must be eliminated because we shall consider only those territories as possibly oil bearing which are of such geological structure that there might be found in their boundaries oil deposits of similar type as those the geological character of which has already been studied. The main factors the oil geologist will have to bear in mind in his calculations are the structure and facies and the best deposits will be found where the most favorable conditions will coincide. Generally speaking, one may state that, with few exceptions, in the German oil fields principally known, the oil bearing rocks are formed by sand, sandstone and sandy marl; productive oil bearing limestones are not known and the oil coming from fissures plays an insignificant part. As regards the kind of structure the type which is generally considered as the ideal of the oil deposits, the normal anticlinal and oil dome structure, is not encountered. We only find the type of oil deposits in faulted and dipped strata which are influenced by the faulting lines and the type of the salt domes. When comparing the areas of the territories free from oil and those which are oil bearing the extension of the latter may not induce erroneous expectations regarding the quantities of oil they might contain.

Within her boundaries of 1914 Germany covered an area of 540,000 square kilometers. The five oil bearing provinces shown in the map cover a total area of more than 200,000 square kilometers. In comparison one must keep in view that the area which has been proved by tests to be really oil bearing and which has been exploited up to now i. e., in Northern Germany, covers a total territory of only about 1,700 hectares.

Suabian-Bavarian Plateau

Now we shall see which is the importance of the different oil provinces with regard to the production they have already given and that which is still to be expected.

No. 1 on the map is the territory of the Suabian-Bavarian plateau and of the region of the Lower Alps in which two geological parts it is divided. Here there is encountered, in a certain sense in the continuation of the oil territory of the Carpathian Mountains, the small oil field of Tegernsee which is oil bearing in the reversed folds of the upper cretaceous strata. The complicated tectonic somewhat remind of the structure of the Carpathian oil deposits, but this does not allow a comparison of the production. Up to now there have been drilled 28 wells (the deepest well at 1,145 meters) with a total production of about 4,000 tons. Some of the wells drilled until 1912 are still producing. The results obtained during the past few years were as follows:

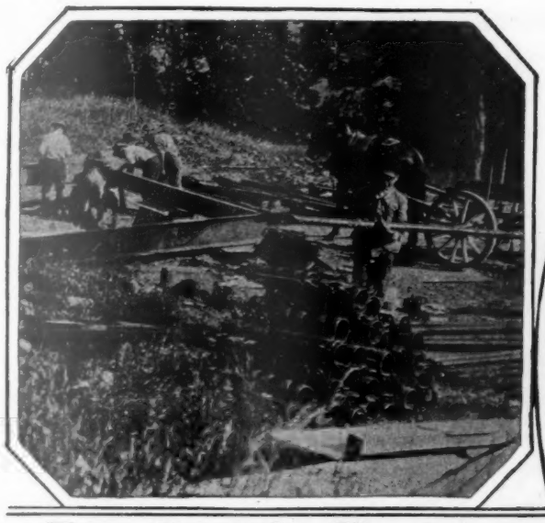
1921	86 tons
1922	73 tons
1923	53 tons

This was a great disappointment in view of the amount of 2,000,000 to 3,000,000 marks spent so far for these operations. Anyhow, one of the wells succeeded in opening a very strong iodine spring which has become of great balneological importance. In spite of the economical failure explorations were continued. In April, 1924, there was started a new well after having suspended an older one and it appears quite certain further wells will follow in this territory. Probably operations will not be limited to the present small exploration district which up to now only extends over an area of 50 hectares but another number of rigs will be erected at the border of the Alps. Excepting the natural outcrops of Tegernsee oil showings are known on the whole in an extension of 350 kilometers. The desire for drilling operations is particularly encouraged by the quality of the oil which amongst German oils is an exceptional one. Tegernsee produces a light Methane oil with a specific gravity of 0.731-0.833 and with an output of benzine of more than 20 per cent.

Only a Small Belt

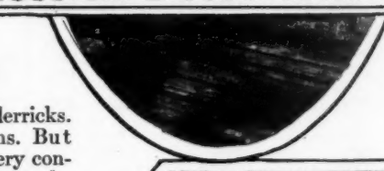
It is very difficult to say anything about the possibility of success of further wells; up to now it is very doubtful whether they will give any commercial results. The oil zone of the Tegernsee type forms only a very small belt of this oil province. Geologically the greatest part belongs to the so-called molasse formation—oligocene and miocene—which with a soft folding fills the area between the Alps and the Danube. In this district a productive oil field does not exist yet, but oil showings and particularly gases have been found. In the vicinity of Passau there exist a good many shallow wells with weak gas exhalations which are partly utilized for domestic consumption. The gas has not yet any commercial importance, but concessions have been granted for the exploration for oil and gas, and four deep

(Continued on Page 104)



View No. 1 (extreme left) Foundation members being assembled.

Erecting the First American Derrick in France



View No. 2 (above) Shows methods used in erection, making a tripod of the lower braces for hoisting and pulling the heavy 27-lb. leg sections in place. Native labor used.

Wildcatting Again!

DIFFERENT countries, different styles—even in derricks. All have their preferences and peculiar conditions. But Moore derricks go everywhere, adapt themselves to every condition of service and climate, from the frozen North to the blazing tropics. Moore derricks are truly universal, because of their superior strength and safety; their fireproof, windproof, insect-proof, and decay-proof construction; and their application to every drilling job, be it light or heavy.

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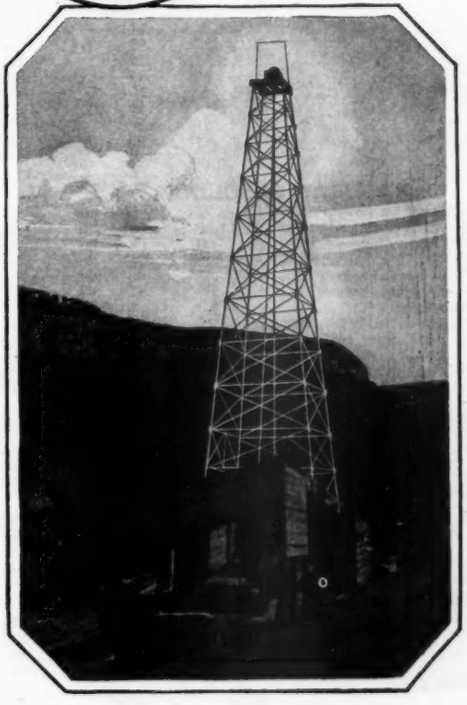
TOMMY BANNON, who has pioneered in both Spain and France with Moore derricks, now has this to say: "For deep foreign wild cat work, I consider the Moore derrick unequalled on account of its great strength and proven safety in every emergency."

Catalog on Request



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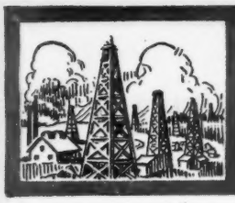

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	Jan. 6		Dec. 30		Dec. 23	
50-52 450 end point (Naphtha)	.07¼	.07½	.07¼	.07½	.07¾	
56-58 450 end point	.07½	.07¾	.07½	.07¾	.07¾	.08
58-60 437 end point (U. S. Motor)	.07¾	.08	.07¾	.08	.08	.08¼
60-62 400 end point	.09¼	.09½	.09½	.09¾	.09½	.09¾
64-66 375 end point	.10½	.10¾	.10½	.10¾	.10¾	.11
68-70 360 end point	.11¼	.11½	.11½	.11¾	.11¾	.12
OKLAHOMA (Group 3)—						
50-52 450 end point	.07¼	.07½	.07¼	.07½	.07¼	.07½
56-58 450 end point	.07½	.07¾	.07½	.07¾	.07¾	.08
58-60 437 end point (U. S. Motor)	.07¾	.08	.07¾	.08	.08	
60-62 400 end point	.09	.09¼	.09	.09¼	.09¼	.09½
64-66 375 end point	.10½		.10¼	.10½	.10¾	.11
68-70 350 end point	.11½	.11¾	.11¼	.11½	.11½	.11¾
KANSAS—						
58-60 437 end point (U. S. Motor)	.08	.08¼	.08	.08¼	.08	.08½
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.07	.07¼	.07	.07¼	.07	.07¼
50-52 440 end point (Naphtha)	.07¼	.07½	.07	.07½	.07¼	.07½
56-58 450 end point	.07½	.07¾	.07½	.07¾	.07½	.08
58-60 437 end point (U. S. Motor)	.08		.08		.08	
60-62 400 end point	.09	.09¼	.08¾	.09	.09	.09½
64-66 390 end point	.10	.10¼	.09¾	.10	.10¼	.10½
64-66 375 end point	.10¼	.10½	.10	.10¼	.10¼	.10¾
68-70 360 end point	.11¼	.11½	.11¼	.11½	.11½	.11¾
NORTH LOUISIANA—						
56-58 450 end point	.08¼	.08½	.08½	.08¾	.08¾	.09
58-60 437 end point (U. S. Motor)	.08½	.08¾	.08¾	.09	.09	.09¼
60-62 400 end point	.09¾	.10	.10	.10¼	.10¼	.10½
64-66 390 end point	.10½	.10¾	.10¾	.11	.11¼	.11½
64-66 375 end point	.10¾	.11	.10¾	.11	.11¼	.11½
ARKANSAS—						
58-60 450 end point	.08¼	.08½	.08¼	.08½	.08½	.08¾
58-60 437 end point (U. S. Motor)	.08½	.08¾	.08½	.08¾	.08¾	.09
64-66 375 end point	.10¾	.11	.10¾	.11	.11	.11¼
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.12	.12¼	.12	.12¼	.12	.12¼
PENNSYLVANIA—						
52 Naphtha	.10⅜		.10⅜		.10⅜	
54 Naphtha	.10⅞		.10⅞		.10⅞	
56 Gasoline	.11		.11		.11	
58 Gasoline	.11¼		.11¼		.11¼	
60 Gasoline	.12¼		.12¼		.12¼	
62 Gasoline	.12¾		.12¾		.12¾	
64 Gasoline	.14½		.14½		.14½	
66 Gasoline	.15½		.15½		.15½	
68-70 Gasoline	.17		.17		.17	
CALIFORNIA—						
54-56 437 end point (U. S. Motor) domestic	.09	.09½	.09	.09½	.09	.09½

*Colorado points.

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	Jan. 6		Dec. 30		Dec. 23	
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.08¾	.09	.08¾	.09	.08¾	.09
Grade A, 72-79.9, 375 end point, rec. 90%	.08¾	.09	.08¾	.09	.08¾	.09
Grade Double B, 84-92, 375 e.p., rec. 85%	.08¼	.08½	.08¼	.08½	.08½	.08¾
Grade B, 76-83.9, 375 end point, rec. 85%	.08¼	.08½	.08¼	.08½	.08½	.08¾
Grade C, 80-90, 375 end point, rec. 78%	.07½	.08	.07¾	.08	.08	.08¼
OKLAHOMA (Group 3)—						
Grade Double A, 80.87.9, 375 e.p., rec. 90%	.09		.08¾		.08½	.08¾
Grade A, 72-79.9, 375 end point, rec. 90%	.09		.08¾		.08¾	.09
Grade Double B, 84-92, 375 e.p., rec. 85%	.08¼	.08½	.08¼	.08½	.08¼	.08½
Grade B, 76-83.9, 375 end point, rec. 85%	.08¼	.08½	.08¼	.08½	.08¼	.08½
Grade C, 80-90, 375 end point, rec. 78%	.07¾	.08	.07¾	.08	.07¾	.08
NORTH TEXAS—						
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.08¾	.09	.08½	.08¾	.08½	
Grade A, 72-79.9, 375 end point, rec. 90%	.08¾	.09	.08½	.08¾	.08½	
Grade Double B, 84-92, 375 e.p., rec. 85%	.08¼		.08¼		.08¼	
Grade B, 76-83.9, 375 end point, rec. 85%	.08¼		.08¼		.08¼	
Grade C, 80-90, 375 end point, rec. 78%	.07¾	.08	.07¾	.08	.07¾	.08
NORTH LOUISIANA—						
Grade B, 76-83.9, 375 end point, rec. 85%	.08	.08¼	.08¼		.08¼	.08½
Grade C, 76-82, 375 end point, rec. 85%	.07½	.07¾	.07¾		.07¾	.08
CALIFORNIA—						
68-80 absorption, 360-390 end point	.11½	.12½	.11½	.12½	.11½	.12
78-84 compression, 350 end point	.11½		.11½		.10½	

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	Jan. 6		Dec. 30		Dec. 23	
60-62 450 end point	.07¾	.08	.08		.08¼	.08½
64-66 450 end point	.07¾	.08	.08		.08¼	.08½
68-70 437 end point	.08	.08¼	.08	.08¼	.08½	.08¾
OKLAHOMA (Group 3)—						
60-62 450 end point	.07¾		.07¾		.08¼	.08½
64-66 437 end point	.07¾	.08	.07¾	.08	.08¼	.08½
68-70 430-435 end point	.08	.08¼	.08	.08¼	.08½	
NORTH TEXAS—						
58-62 440 end point	.07¾	.08	.07¾	.08	.08¼	.08½
58-60 450 end point	.07¾	.08	.07¾	.08	.08¼	.08½
PENNSYLVANIA—						
*60-62	.11¾		.11¾		.12½	
*64-66	.12		.12		.12½	
*66-68	.12		.12		.12½	
*68-70	.12		.12		.12½	

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	Jan. 6		Dec. 30		Dec. 23	
41-43 water white Kerosene	.04⅜	.04½	.04¼	.04⅜	.04¼	.04⅜
42-44 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
KANSAS—						
41-43 water white Kerosene	.04⅜	.04⅝	.04⅜	.04⅝	.04⅜	.04⅝
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05		.05		.05	.05½
42-44 water white Kerosene	.05¼		.05¼		.05¼	.05½
ROCKY MOUNTAIN STATES—						
*40-42 water white Kerosene	.07½	.07¾	.07½	.07¾	.07½	.07¾
NORTH TEXAS—						
41-43 water white Kerosene	.04¼	.04⅜	.04⅛	.04¼	.04¼	.04⅜
41-43 prime white Kerosene	.04	.04¼	.04	.04¼	.04	.04⅛
40-42 prime white Kerosene	.04	.04¼	.04	.04¼	.04	.04⅛
42-44 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04¼	.04½	.04¼	.04½	.04¼	.04½
42-44 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
40-41 prime white Kerosene	.04	.04⅛	.04	.04⅛	.04	.04¼
ARKANSAS—						
41-43 water white Kerosene	.04¾	.05	.04¾	.05	.04¾	.05
42-44 water white Kerosene	.05	.05¼	.05	.05¼	.05	.05½
PENNSYLVANIA—						
43 Kerosene prime white	.07		.07		.07	
45 Kerosene water white	.07½		.07½		.07½	
46 Kerosene water white	.08¼		.08¼		.08¼	
47 Kerosene water white	.08¼		.08¼		.08¼	
34 Neutral	.09		.09		.09	
34 Sundebloomed Neutral	.07¾		.07¾		.07¾	
36 Miners' Neutral	.06½		.06½		.06½	
300 Mineral Seal	.07½		.07½		.07½	
CALIFORNIA—						
40-42 water white (high burning test)	.07½	.08	.07½	.08	.07½	.08
Engine distillate, 43-45 445 end point	.06	.06½	.06	.06½	.06	.06½
Engine distillate, 42-44 480 end point	.05½	.05¾	.05½	.05¾	.05½	.05¾

*Colorado points.

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	Jan. 6		Dec. 30		Dec. 23	
24-26 Fuel Oil (sellers' cars, Group 3)	1.30	1.35	1.20	1.25	1.15	1.20
22-24 (El Dorado)	1.30	1.35	1.20	1.25	1.20	1.25
18-20 (Smackover)	1.25	1.30	1.12	1.17	1.12	1.15
32-36 Gas Oil	.03½	.03⅝	.03⅜	.03½	.03¼	.03⅜
36-38 Distillate	.03¾	.04	.03¾	.04	.03½	.03⅝
38-40 Straw distillate	.04	.04⅛	.04	.04¼	.03¾	.04
KANSAS—						
24-26 Fuel Oil	1.40	1.45	1.30	1.35	1.25	1.30
32-36 Gas Oil	.03⅝	.03¾	.03½	.03⅝	.03¼	.03½
38-40 Distillate	.04⅛	.04¼	.04⅛	.04¼	.03⅞	.04
OKLAHOMA (Group 3)—						
22-26 Fuel Oil (sellers' cars)	1.25	1.30	1.25		1.15	1.20
24-26 Fuel Oil (buyers' cars)	1.25	1.30	1.25		1.15	1.20
24-26 Fuel Oil (sellers' cars)	1.27½	1.30	1.25		1.17½	1.20
28-30 Fuel Oil (sellers' cars)	1.35		1.30	1.35	1.25	1.30
32-36 Gas Oil	.03⅜	.03½	.03⅜	.03½	.03¼	.03⅜
36-38 Distillate	.03¾	.04	.03¾	.04		
38-40 Straw distillate	.04	.04⅛	.04	.04⅛	.03¾	.04
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.25		1.25		1.15	
26-30 Fuel Oil	1.35		1.30	1.35	1.20	1.25
32-36 Gas Oil	.03¼	.03½	.03¼	.03½	.03¼	
36-38 Distillate	.03⅜	.03⅞	.03⅜	.03⅞		
38-40 Straw distillate	.03⅞	.04⅛	.03⅞	.04⅛	.03⅝	.04⅛
NORTH LOUISIANA—						
18-20 Fuel Oil	1.20	1.25	1.15		1.10	1.15
24-26 Fuel Oil	1.25	1.30	1.20	1.25	1.15	1.20
32-36 Gas Oil	.03½	.03¾	.03¼	.03½	.03¼	.03½
ARKANSAS—						
38-40 Distillate	.04	.04¼	.04	.04¼	.04	
32-36 Gas Oil	.03½	.03⅝	.03½	.03⅝	.03⅜	.03½
22-26 Refinery Fuel Oil	1.20		1.20		1.15	1.20
GULF COAST (South Texas)—						
Gas Oil	.04½	.05	.04½	.05	.04½	.05
Fuel Oil	1.65		1.65		1.60	1.70
PENNSYLVANIA—						
30-34 Fuel Oil	.06		.06		.06	
36-40 Fuel Oil	.06½		.06½		.06½	
CALIFORNIA—						
33-36 Distillate	.04	.04½	.04	.04½	.04	.04½
27-33 Distillate	.03¾	.04	.03¾	.04	.03¾	.04
15-20 Fuel Oil (at tide water)	1.40		1.40		1.40	

NEUTRAL OILS AND WAX

OKLAHOMA (Group 3)—	Jan. 6		Dec. 30		Dec. 23	
70-80 vis., 2½ color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
100 vis., 2 color, 20-25 cold test	.04½	.05	.04½	.05	.04½	.05
100 vis., 3 color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
150 vis., 3 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.06½	.07	.06½	.07	.06½	.07
180 vis., 4 color, 23-28 cold test	.08	.08½	.08	.08½	.08	.08½
180 vis., 3 color, 23-28 cold test	.08½	.09	.08½	.09	.08½	.09
200 vis., 3 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
200 vis., 4 color, 23-28 cold test	.09½	.10	.09½	.10	.09½	.10
220 vis., 3 color, 25-30 cold test	.11½	.12	.11½	.12	.11½	.12
220 vis., 4 color, 25-30 cold test	.10¾	.11½	.10¾	.11½	.10¾	.11½
240 vis., 3 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
240 vis., 4 color, 25-30 cold test	.12¾	.13¼	.12¾	.13¼	.12¾	.13¼
280 vis., 3 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
280 vis., 4 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.07½	.08	.07½	.08	.07½	.08
180 vis., 6 color, 23-28 cold test	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
200 vis., 5 color, 23-28 cold test	.09	.09½	.09	.09½	.09	.09½
200 vis., 6 color, 23-28 cold test	.13	.13½	.13	.13½	.13	.13½
220 vis., 5 color, 25-30 cold test	.10	.10½	.10	.10½	.10	.10½
220 vis., 6 color, 25-30 cold test	.14¼	.14¾	.14¼	.14¾	.14¼	.14¾
240 vis., 5 color, 25-30 cold test	.12	.12½	.12	.12½	.12	.12½
240 vis., 6 color, 25-30 cold test	.15¼	.15¾	.15¼	.15¾	.15¼	.15¾

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

280 vis., 5 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
180-200 vis., S. R. green, 40-45 cold test	.07½	.08	.07½	.08	.07½	.08
190-200 dark green, 40-45 cold test	.06½	.07	.06½	.07	.06½	.07
170-190 dark green, 40-45 cold test	.06	.06½	.06	.06½	.06	.06½
600, E filtered	.20	.21	.20	.21	.20	.21
190-200 vis. @ 210 "D" Bright Stock	.34		.34		.34	
200-210 vis. @ 210 "E" Bright Stock	.29		.29		.29	
150 vis. @ 210 "D" Bright Stock	.30		.30		.30	
150 vis. @ 210 "E" Bright Stock	.26		.26		.26	
Waxes:						
124-126 White Crude Scale Wax	.05	.05⅛	.05	.05⅛	.05	.05⅛
PENNSYLVANIA—						
150, 3 color	.21½		.21½		.21½	
180, 3 color	.24		.24		.24	
200, 3 color	.25½		.25½		.25½	
220, 3 color	.28		.28		.28	
600, steam refined	.22		.22		.22	
635, steam refined	.25½		.25½		.25½	
650, steam refined	.28¾		.28¾		.28¾	
600, Pennsylvania flash	.34		.34		.34	
630, Pennsylvania flash	.39		.39		.39	
*550, E filtered	.23½		.23½		.23½	
*600, E filtered	.25		.25		.25	
600, E filtered	.23¾		.23¾		.23¾	
600, D filtered	.32		.32		.32	
550, E filtered	.22		.22		.22	
550, D filtered	.25		.25		.25	
Pennsylvania Bright Stock	.40½		.40½		.40½	
†122-124 White Crude Scale Wax	.05⅝		.05½		.05½	
*122-124 White Crude Scale Wax	.05½		.05½		.05½	

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.06½	.07	.06½	.07	.06½	.07
No. 2 color, 100 vis., pale oil	.08½	.09½	.08½	.09½	.09½	.10½
No. 2 color, 150 vis., pale oil	.10	.11	.10	.11	.11½	.12½
No. 3 color, 200 vis., pale oil	.13	.14	.13	.14	.13½	.14½
No. 3 color, 300 vis., pale oil	.15	.16	.15	.16	.16	.17
No. 3½ color, 500 vis., pale oil	.17	.18	.17	.18	.18	.19
No. 3½ color, 750 vis., pale oil	.22½	.23½	.22½	.23½	.23½	.24½
No. 4½ color, 1200 vis., pale oil	.25½	.26½	.25½	.26½	.25½	.26½
No. 4½ color, 2000 vis., pale oil	.29	.30	.29	.30	.29	.30
No. 2 color, 150 vis., pale filtered	.20½		.20½		.20½	
No. 2 plus color, 200 vis., pale filtered	.22		.22		.22	
No. 2½ minus color, 300 vis., pale filtered	.25½		.25½		.25½	
No. 2½ color, 500 vis., pale filtered	.29½		.29½		.29½	
No. 2½ color, 750 vis., filtered	.39½		.39½		.39½	
No. 5 to 6 color, 200 vis., red oil	.11½	.12½	.11½	.12½	.12	.13
No. 5 to 6 color, 300 vis., red oil	.13½	.14½	.13½	.14½	.14½	.15½
No. 5 to 6 color, 500 vis., red oil	.15½	.16½	.15½	.16½	.16	.17
No. 5 to 6 color, 750 vis., red oil	.20½	.21½	.20½	.21½	.20½	.21½
CALIFORNIA—						
200 vis., 2½-3 color	.15	.16	.15	.16	.15	.16
300 vis., 2 -4 color	.15	.17	.15	.17	.15	.17
350 vis., 3½-4 color	.17½	.18½	.17½	.18½	.17½	.18½
400 vis., 4 -4½ color	.19	.20	.19	.20	.19	.20
Red Neutrals:						
200 vis., 4½-5 color	.13	.14	.13	.14	.13	.14
300 vis., 5 -6 color	.14	.16	.14	.16	.14	.16
400 vis., 5 -6 color	.16	.17	.16	.17	.16	.17
500 vis., 6 -6½ color	.17	.18	.17	.18	.17	.18
600 vis., 6½ plus color	.18	.19	.18	.19	.18	.19

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK DOMESTIC MARKET

Bayonne Refinery Prices:	Jan. 6	Dec. 30	Dec. 23
U. S. Motor Gasoline, 58-60 437	.13¼	.13¼	.13¼
*Bunker Oil, 14-16 Be.	1.80	1.80	1.80
Diesel Oil, 28-30 Be.	2.10	2.10	2.10
Furnace Oil, New York City	.10	.10	.10
Gas Oil, 32-36 Be.	.05¼	.05¼	.05¼
41-43 Kerosene prime white	.08½	.08½	.08½

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

Motor Gasoline:	Jan. 6	Dec. 30	Dec. 23
58-60 Be. gravity, in cases	.26.65	.26 65	.26 65
U. S. Navy, in bulk	.12½	.12½	.12½
Naphtha:			
60° F., 59-61 Be., gravity, in bulk	.14¾	.14¾	.14¾
60° F., 63-66 Be. gravity, in bulk	.16	.16	.16
60° F., 66-68 Be. gravity, in bulk	.17½	.17½	.17½
Kerosene:			
Standard white, 40-42 Be. grav., in bulk	.06½	.06½	.06½
Standard white, 40-42 Be. grav., in barrels	.13½	.13½	.13½
Standard white, 40-42 Be. grav., in cases	.16 9	.16 9	.16.9
Water white, 42-44 Be. grav., in bulk	.07½	.07½	.07½
Water white, 42-44 Be. grav., in barrels	.14½	.14½	.14½
Water white, 42-44 Be. grav., in cases	.17.9	.17.9	.17.9
†Lubricating Oils:			
Cylinder Stock, extra light filtered, 600, in barrels	.46½	.46½	.46½
Cylinder Stock, light filtered, 600, barrels	.40½	.40½	.40½
No. 1 white neutral, .878 spec. grav.	.43	.43	.43
No. 1 Summer Black, .895 spec. grav.	.18	.18	.18
No. 5 Bright Stock, .897 spec. grav.	.50½	.50½	.50½
Special "A" red oil, .897 spec. grav., 170 vis.	.21	.21	.21
No. 2 red oil, .903 spec. grav., 212 vis.	.22	.22	.22
No. 1 red oil, .905 spec. grav., 265 vis.	.23	.23	.23
Polar red oil, .906 spec. grav., 295 vis.	.25	.25	.25
Pale oil, "25", .899 spec. grav.	.20½	.20½	.20½
Pale oil, "28", .892 spec. grav.	.16	.16	.16
Paraffin Wax:			
120-122 a.m.p., per lb.	.06	.06	.06
125-127 a.m.p., per lb.	.06⅛	.06⅛	.06⅛
130-132 a.m.p., per lb.	.06½	.06½	.06½
135-137 a.m.p., per lb.	.07½	.07½	.07½

†All lube prices in barrels.

LOS ANGELES EXPORT MARKET

	Jan. 6		Dec. 30		Dec. 23	
Kerosene water white	.05	.05½	.05	.05½	.05	.05½
U. S. Motor gasoline, 54,56, 437 end point	.08½	.09	.08½	.09	.08½	.09

CRUDE OIL PRICES

December 27. — The Joseph Seep Purchasing Agency advanced all grades of Pennsylvania crude 25 cents.

January 3.—The Ohio Oil Co. advanced Wooster crude 10 cents and Waterloo crude 15 cents.

Arkansas and North Louisiana

Caddo, 38° and above	$1.35
35° to 37.9°	1.25
32° to 34.9°	1.15
Below 32°	1.00
Homer, 35° and above	1.10
33° to 34.9°	1.00
31° to 32.9°	.90
Below 31°	.75
Haynesville, 33° and above	1.00
Below 33°	.90
El Dorado, 33° and above	1.00
Below 33°	.90
Bull Bayou, 38° and above	1.15
35° to 37.9°	1.00
32° to 34.9°	.85
Cotton Valley	.95
De Soto	1.20
Crichton	1.00
Bellevue	1.35
Smackover, 25° and above	.95
Below 25°	.85
*Stephens, Ark.:	
25° and above	.95
Below 25°	.85

*Posted by Atlantic Oil Producing Co.

Wyoming and Montana

Rock Creek (Wyo.)	$ .95
Salt Creek	.85
Big Muddy	.75
Mule Creek	.60
Grass Creek (light)	1.20
Elk Basin	1.20
Lance Creek	1.15
Osage	1.15
Cat Creek (Mont.)	1.20
Sunburst (Mont.)	.90
Lost Soldier	.78
Greybull and Torchlight	1.20
Hamilton Dome	.80

Lander based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas

Prairie Oil & Gas Co. and other major purchasing companies, except as noted:

Below 30°	$ .75
30° to 32.9°	.90
33° to 35.9°	1.10
36° and above	.125
Magnolia Petroleum Co.:	
*33° and above	1.25
Corsicana light	1.25
Corsicana heavy	.90
Mexia	1.25
Powell	1.25
Thrall	1.00

*Below 33° gravity, same as Prairie.

Prairie Oil & Gas Co. buying crude in new Wortham Pool at gravity basis.

Humble Oil & Refining Co.

Mexia	$1.25
Powell	1.25
Currie	1.25
Richland	1.25
Wortham	1.25

Wichita-Archer Counties and Moran, same as Prairie.

Gulf Coast

†Grade "A"	$1.50
†Grade "B"	1.25
Luling	.90
Laredo (Magnolia Petroleum Co.)	.75
Rockdale-Minerva (Milam County)	1.25
Calliham (Live Oak-McMullen)	1.53
*High Island	.85

*Posted by Sun Co.

†Following are the specifications for Gulf Coast Crudes as posted by Humble Oil & Refining Co.:

Grade "A"—Viscosity not less than 100 seconds at 100° F. Saybolt. Sulphur not over .4 per cent. Baume gravity not over 25 at 60° F.

Cold test of distillates having viscosity of 1.000 seconds at 100° F., A. S. T. M. method.

Grade "B"—Embraces all coastal crude which does not meet the test for "A" Grade crude.

***Somerset**

26° and above	.95
Below 26°	.85

*Posted by Grayburg Oil Co.

California

14° to 19.9°	$1.00
20° to 20.9°	1.01
21° to 21.9°	1.02
22° to 22.9°	1.03
23° to 23.9°	1.05
24° to 24.9°	1.07
25° to 25.9°	1.10
26° to 26.9°	1.13
27° to 27.9°	1.16
28° to 28.9°	1.19
29° to 29.9°	1.22
30° to 30.9°	1.25
31° to 31.9°	1.28
32° to 32.9°	1.31
33° to 33.9°	1.34
34° to 34.9°	1.37
35° to 35.9°	1.40
36° to 36.9°	1.46
37° to 37.9°	1.52
38° to 38.9°	1.58
39° to 39.9°	1.64
40° to 40.9°	1.70
41° to 41.9°	1.76
42° and above	1.82

Eastern States

Penna Grade Oil in New York Transit Lines	$3.10
Bradford District Oil in National Transit Lines	3.10
Penna Grade Oil in National Transit Lines	3.00
Penna Grade Oil in Southwest Pa. Pipe Line Lines	3.00
Penna Grade Oil in Eureka Pipe Line Lines	3.00
Penna Grade Oil in Buckeye Pipe Line Lines	3.00
Cabell Grade Oil in Eureka Pipe Line Lines	1.45
Corning Grade Oil in Buckeye Pipe Line Lines	1.50
Somerset Medium Oil in Cumberland Pipe Line Lines	1.55
Somerset Light Oil in Cumberland Pipe Line Lines	1.70
Ragland Grade Oil in Cumberland Pipe Line Lines	.90
Lima	1.58
Wooster	1.50
Illinois	1.37
Indiana	1.38
Princeton	1.37
Plymouth	.75
Waterloo	.90
†Oil Springs, Canada	2.30
†Petrolia, Canada	2.23
*Western Kentucky, 36° and above	1.30
*Western Kentucky, 33° to 35.9°	1.20
*Western Kentucky, 32.9° and below	1.10
Cumberland, Barren and Monroe Counties (Kentucky), (Paragon Development Co.)	1.70

†Plus Government bounty of 26½c.

*Prices for Warren, Allen, Hancock, and Ohio Counties by Indiana Refining Co. Prices for Warren and Simpson Counties by Paragon Development Co., same as Indian Refining Co.

Mexican Crude

*Tuxpam (f.o.b. Mexican ports)	$1.15
†Panuco (f.o.b. Mexican ports)	.95
Tuxpam (New York)	1.72
Panuco (New York)	1.38

*Plus 32.33c. †Plus 17.64c tax. Prices based on contracts.

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MEMBER AUDIT BUREAU OF CIRCULATION

FIRST DECREASE SINCE 1906

A preliminary estimate by the Geological Survey calculates the oil production in the United States during 1924 at 717,000,000 barrels, a decrease of 2 per cent compared with 1923 and the first decrease in annual production since 1906.

The Survey also reports the greatest decrease in stocks during November of any month since August, 1919.

These figures give point to the question whether we may not have reached the turning point in the production of crude oil in this country. They are much more significant than the opening of a field like Wortham which at best can be but of temporary effect.

They tend to alter the viewpoint on stocks from consideration as a menacing surplus to appraisal as a reserve.

If our annual production barely holds its ground, to say nothing of declining, those reserves will be needed badly.

Of course, a decrease of 15,000,000 barrels or so in a year's production is comparatively negligible compared to a reserve of 400,000,000 barrels, but the real significance is not in the quantity but in the trend. The possible decline of our production can not be disregarded any more than the possible discovery of new fields.

The character of our surplus stocks depends wholly upon the daily production. If production is increased largely the stocks overhang the market and depress prices. If production falls the menace of stocks is proportionately lightened; they may become even a benefit.

At the same time the industry should not concentrate its attention too exclusively on production of crude, nor even on the ordinary production of gasoline. It must not be overlooked that, if production of crude were to fall, the refining industry stands ready to increase immensely its recovery of gasoline and that back of that the automotive industry, if need be, is prepared to produce motors of much greater efficiency in utilization of energy.

There is the assurance also that with a definite decline of production in the United States steps have been taken to hasten the development of fields abroad, as in Venezuela, when the demand and the price justify the cost.

The same improvement in prices would mean an intensified drilling campaign in our own fields, in remoter districts and deeper sands.

Decreasing production in the United States would be far from implying a world famine in oil. It would simply mean more costly production and consequently better prices because oil products have become so essential to modern industry and transportation that the world has to have them.

A real famine in oil would bring frenzied bidding for petroleum at almost any price.

In Europe they are devoting almost as much consideration to the possibilities of shale oil as to recovery by the drill. The mining operations at Pechelbronn have been shown so practical that they are engaging serious thought even in this country. The interest of a leading oil company in patents for the recovery of oil now unrecovered proves what foresighted men in the industry are thinking about it.

From 25 to 75 per cent of the oil is now unrecovered, with probably an average of 50 per cent. When the demand and price justify the industry will be prepared to go back after that oil.

A comparison of estimates of our oil reserves over recent years appearing in this issue of The Oil and Gas Journal shows very strikingly how much even the most expert are in the dark. It has become a customary comment that exploration for oil is going on more rapidly than ever and aided by experience and science becoming less accidental, but the wholly unsuspected nature of many of the discoveries of 1924 rather upset that complacency.

Despite the first decrease in production in 18 years there is much more reason, with prices justifying enterprise and effort, to expect production to be maintained than to find it failing.

But that the era of cheapness in petroleum products may be nearing its close is possible. In any event, no industry, however indomitable, could be expected to continue indefinitely the production of its products with so little return as the oil industry has done in recent years.

Particularly when that industry is itself depressing prices by its own efficiency. Had the oil industry been content to trail along with one-third the recovery of gasoline, for instance, possible today it could have commanded prices in proportion to products of other industries which have advanced to unprecedented quotations.

Instead, the oil industry has so improved its methods that gasoline is lower in relation to the prices of 1913 than all other commodities, so improved them, indeed, that the stock of gasoline has been the largest in history even at those prices.

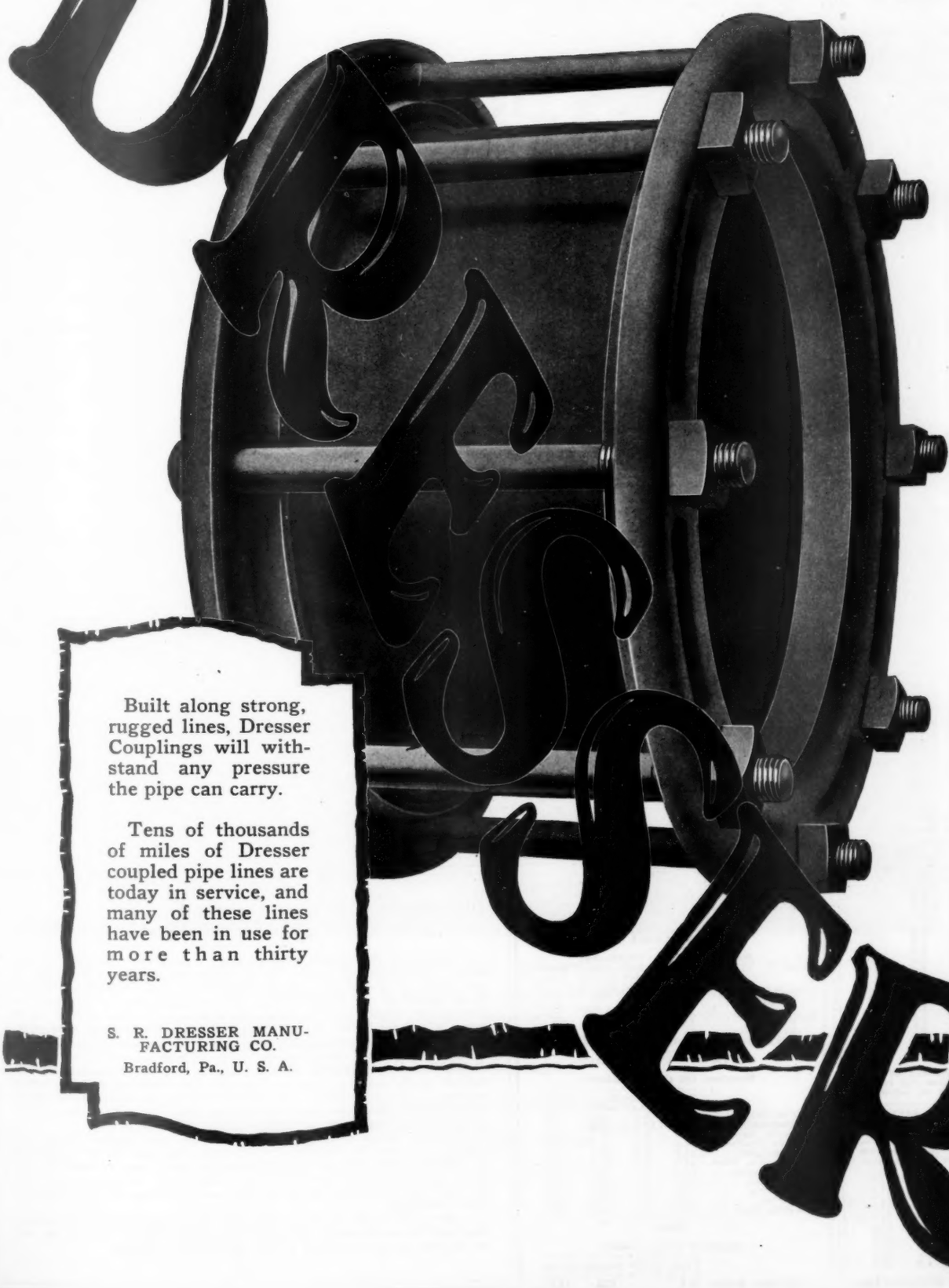
Any decline in the production of crude oil, forcing higher prices for the raw material in order to stimulate the search for new fields, must, of course, react on the cost of the refined products.

Should this come at a time when the Federal Government is embarking on a conservation campaign on the theory that overproduction and cheapness is waste there will be an interesting collision of ideas.

Out of such a situation the public could not fail to have the facts about the oil business brought home to them. It will be well for the industry if the period of readjustment should come at such a time. The necessity for the inevitably higher prices that would follow would be forced on public attention.

In all the agitation against the oil business, both by the politicians and among the people, the unanswerable logic of the actual situation has been ignored. That is, as President Charles E. Mitchell of the National City Bank, said at Fort Worth, that the final results of the running account between the oil industry and the public are to be found in the price of oil products.

DRESSER



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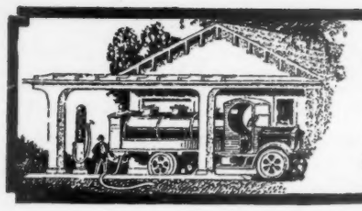


TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, Jan. 6

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Chicago District—				
†100 gals. or more	13.0	...	16.0	11.0
Decatur, Ill.	13.2	...	15.2	11.5
East St. Louis	12.1	...	14.35	10.6
Joliet	13.4	...	15.4	11.7
Peoria	13.0	...	15.0	11.5
Quincy	13.2	...	15.2	11.3
Davenport, Ia.	13.5	...	16.5	11.9
Des Moines	13.5	...	16.5	11.9
Keokuk	13.5	...	15.5	11.9
Sioux City	13.0	...	15.0	11.5
Duluth, Minn.	14.5	...	16.5	12.6
Minneapolis	14.2	...	16.2	12.6
La Crosse, Wis.	14.2	...	16.2	12.4
Milwaukee	13.1	...	15.1	11.3
Madison	13.3	...	15.3	11.5
Detroit, Mich.	13.8	...	15.8	12.2
Grand Rapids	13.7	...	15.7	12.1
Saginaw	13.9	...	15.9	12.3
Evansville, Ind.	15.0	2.0	17.0	11.5
Fort Wayne	15.4	2.0	17.4	11.9
Indianapolis	15.2	2.0	17.2	11.7
South Bend	15.4	2.0	17.4	11.9
Fargo, N. D.	15.9	1.0	17.9	14.6
Huron, S. D.	17.0	2.0	19.0	13.1
Sioux Falls	15.0	2.0	17.0	12.6
*Kansas City, Mo.	15.9	3.0	17.9	10.3
*Springfield	15.8	3.0	17.8	11.2
*St. Louis	14.6	2.5	16.9	11.0
*St. Joseph	15.0	2.5	17.0	10.9
Wichita, Kans.	12.8	...	14.8	9.8
Bartlesville, Okla.	14.4	...	16.4	9.9

State tax is 2c. Remainder is city tax.
†Tank wagon price on less than 100 gallons, 14c.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Newark, N. J.	13.5	...	....	13.0
Atlantic City	13.5	...	....	13.0
Annapolis, Md.	15.0	2.0	17.0	12.0
Baltimore	15.0	2.0	17.0	11.0
Cumberland	15.0	2.0	17.0	12.5
Washington, D. C.	16.0	2.0	18.0	12.5
Norfolk, Va.	17.0	3.0	19.0	13.5
Petersburg	17.0	3.0	19.0	13.5
Danville	17.0	3.0	19.0	13.0
Richmond	17.0	3.0	19.0	13.5
Roanoke	17.0	3.0	19.0	13.5
Keyser, W. Va.	15.0	2.0	....	13.5
Charleston	16.0	2.0	....	12.5
Parkersburg	16.0	2.0	....	13.5
Wheeling	16.0	2.0	....	13.5
Charlotte, N. C.	15.0	3.0	....	13.5
Hickory	15.0	3.0	....	12.5
Mt. Airy	15.0	3.0	....	13.5
Salisbury	15.0	3.0	....	13.5
Charleston, S. C.	15.5	3.0	....	14.0
Columbia	15.5	3.0	....	14.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Atlanta, Ga.	17.0	3.0	20.0	11.0
Augusta	17.0	3.0	20.0	13.5
Macon	17.0	3.0	20.0	14.5
Savannah	14.0	3.0	17.0	13.0
Birmingham, Ala.	15.0	2.0	18.0	14.5
Mobile	14.0	2.0	17.0	12.5
*Montgomery	16.0	3.0	19.0	15.5
Clarksdale, Miss	15.0	3.0	18.0	12.0
Jackson	15.0	3.0	18.0	10.0
Natchez	14.5	3.0	17.5	11.5
Vicksburg	14.5	3.0	17.5	11.5
Jacksonville, Fla	15.0	3.0	18.0	13.0
Miami	17.0	3.0	20.0	14.5
Pensacola	15.0	3.0	18.0	13.5
Tampa	15.0	3.0	18.0	13.0
Lexington, Ky.	16.0	3.0	19.0	14.0
Covington	15.0	3.0	18.0	14.0
Louisville	15.0	3.0	17.0	12.0

*In addition to State tax of 2 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and ½ cent on kerosene.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Dallas, Tex.	11.0	1.0	14.0	10.0
Fort Worth	11.0	1.0	14.0	10.0
Houston	12.0	1.0	15.0	10.0
San Antonio	11.0	1.0	14.0	10.0
El Paso	14.0	1.0	16.0	11.0
Muskogee, Okla.	14.0	2.5	17.0	11.0
Oklahoma City	14.0	2.5	17.0	11.0
Tulsa	12.0	2.5	15.0	10.0
Ft. Smith, Ark.	15.0	4.0	18.0	12.0
Little Rock	17.0	4.0	19.0	11.0
*Texarkana	16.0	4.0	19.0	10.0

*Does not include 1c additional tax.

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
San Francisco	15.0	2.0	18.0	15.5
Los Angeles	13.5	2.0	16.5	15.5
Fresno	16.5	2.0	18.5	17.5
Reno, Nev.	18.5	2.0	21.5	19.0
Portland, Ore.	16.0	3.0	19.0	16.5
Seattle, Wash.	15.0	2.0	18.0	16.5
Tacoma	15.0	2.0	18.0	16.5
Spokane	19.0	2.0	22.0	20.5
Phoenix, Ariz.	21.0	3.0	24.0	21.5

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Basin, Wyo.	17.0	1.0	....	14.0
Casper	16.0	1.0	17.0	12.0
Cheyenne	16.5	1.0	18.5	13.5
Cody	18.0	1.0	....	15.0
Lander	17.0	1.0	....	14.0
Albuquerque, N. M.	20.5	1.0	22.5	15.5
Salt Lake, Utah	20.0	2.0	22.0	17.0
Ogden	20.0	2.5	22.0	17.0
Denver, Colo.	14.0	2.0	16.0	13.5
Glenwood Spgs.	20.0	2.0	....	17.5
Pueblo	18.0	2.0	18.0	13.5
Billings, Mont.	18.5	2.0	20.5	14.5
Butte	20.0	2.0	22.0	15.0
Great Falls	20.0	2.0	22.0	16.0
Helena	20.0	2.0	22.0	16.0
Miles City	19.5	2.0	21.5	15.5
Missoula	21.0	2.0	23.0	16.0
Boise, Idaho	21.5	2.0	23.5	19.0
Idaho Falls	21.0	2.0	23.0	18.5

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
*Pittsburgh, Pa.	15.0	...	20.0	14.0
*Philadelphia	15.0	...	20.0	14.0
*Scranton	15.0	...	20.0	14.0
*Allentown	15.0	...	20.0	14.0
*Altoona	15.0	...	20.0	14.0
*Erie	15.0	...	20.0	14.0
Dover, Del.	17.0	2.0	20.0	14.0
Wilmington	17.0	2.0	20.0	14.0
Springf'ld, Mass.	15.0	...	18.0	13.0
Worcester, Mass	15.0	...	18.0	13.0
Boston	15.0	...	18.0	11.0
Providence, R. I.	15.0	...	18.0	13.0
Hartford, Conn.	16.0	1.0	19.0	12.0
New Haven, Conn.	16.0	1.0	19.0	13.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Albany, N. Y.	15.0	...	....	13.0
*New York	15.0	...	....	13.0
Buffalo	13.0	...	....	12.0
Rochester	15.0	...	....	13.0
Syracuse	15.0	...	....	12.0
Boston, Mass.	15.0	...	....	13.0
Providence, R. I.	15.0	...	....	13.0
Augusta, Me.	16.0	1.0	....	13.0
Manchester, N. H.	17.0	2.0	....	13.0
Burlington, Vt.	16.0	1.0	....	13.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station prices in its territory. In most cases the service station price is 2 or 3 cents higher than tank wagon price.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Omaha	11.0	...	13.0	11.5
Crawford	14.0	...	....	12.25
McCook	14.75	...	16.75	13.0
Norfolk	13.75	...	15.75	13.0
North Platte	14.75	...	16.75	12.75
Scotts Bluff	14.25	...	16.25	12.25

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
New Orleans, La.	13.5	2.0	15.5	9.0
Alexandria	14.5	2.0	16.5	13.0
Baton Rouge	13.0	2.0	15.0	11.5
Lake Charles	14.5	2.0	16.5	13.0
Shreveport	14.5	2.0	16.5	13.0
Memphis, Tenn.	14.0	2.0	16.0	14.0
Chattanooga	15.0	2.0	17.0	14.5
Knoxville	16.5	2.0	18.5	15.0
Nashville	15.5	2.0	17.5	13.5
Bristol	17.0	2.0	19.0	13.5
Little Rock, Ark.	17.0	4.0	19.0	13.0

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
All Ohio points	15.0	...	17.0	14.0

TANK WAGON CHANGES

Following are some recent increases announced by the Magnolia Petroleum Co. in its territory: Dallas, effective December 8, tank wagon 1 cent and service station 1 cent; Fort Worth, effective December 15, tank wagon 1 cent; Houston, effective December 15, tank wagon 2 cents, service station 1 cent; San Antonio, effective December 15, tank wagon 1 cent, service station 2 cents; El Paso, effective December 9, tank wagon 4 cents, service station 2 cents. A decrease of 2 cents in service station price at Muskogee, Okla., was effective December 7.

STRONG DEMAND FOR FUELS CONTINUES

(Continued from Page 22)

Conditions in the oil business can undergo rapid changes, a period of one to three months often bringing a complete reversal of statistical position. But as yet leading market observers are not able to point to any condition which seriously threatens the fuel oils in their present price structure.

Gasolines and Naphtha

There has been more buying of gasoline during the past week than there was the last week of December. Warmer weather brought a few jobbers into the market and when prices held firm for several days last week, marketers who were sold short for January covered their requirements and this buying has also aided the market. Export and domestic buying in the North Texas area which strengthened the price situation in that section also aided Oklahoma refiners.

The 58-60 U. S. Motor grade remains firm at 7¾ cents to 8 cents. The 60-62, 400 grade is also unchanged at 9 cents to 9¼ cents, but the low price on 64-66 grades is ¼-cent higher than a week ago.

Kerosenes and Distillates

Several refiners and marketing organizations reported a slight improvement in the demand for kerosenes. One concern which has refused to take low prices which have prevailed for several weeks reported more sales at the higher prices.

General quotations have not changed, however, as there are still refiners willing to sell at 4¼ cents for 41-43 water white and 4½ cents for 42-44, water white. A few plants at least have reduced their kerosene output due to the heavy demand for distillates and fuel oils so any improvement in market is probably due to a decrease in supply rather than an increase in demand.

A majority of the refiners have not changed their distillate prices. Many are sold up for January. More material will be available on the open market after the middle of the month and a continued strong demand will be necessary to maintain present prices. The low price on any grade was 3¾ cents, with a price range up to 4¾ cents for the best grade of prime distillate of low cold test.

Natural Gasolines

A near famine exists in the Grade A natural gasolines. The output has been reduced by the cold weather and many buyers refuse to consider any other grade. Nine cents was the prevailing price in Group 3 during the past week with a few sales reported at 9¼ cents. A substantial part of the absorption output which formerly was of Grade A or Double A specifications is now sold as Grade B and Double B. Due to this fact these grades are offered more freely at 8¼ cents to 8½ cents. Grade C prices are unchanged at 7¾ cents to 8 cents.

Lubricating Oils and Wax

Manufacturers expect the spring demand for all grades of Mid-Continent lub oils to get under way in the near future. Several report inquiries from jobbers who, during the winter months, use zero cold test oils of the Gulf Coast area. Wax prices are unchanged at 3 cents to 5¼ cents.

EL DORADO CRUDE ADVANCE

SHREVEPORT, La., Jan. 5.—Effective December 29 the Shreveport-El Dorado Pipe Line Co. posted a 25-cent advance in Eldorado, Ark., crude. Several of the independent refiners here secure a part or the whole of their crude supply through this company. The present posted prices of the company are: Below 33° gravity $1.15 and 33° and above $1.25. Premium paying was prevalent in the field previous to the announcement of the advance.

REFINERY RESUMES

The Bell Oil & Gas Co.'s refinery at Grandfield, Okla., which was purchased by that concern recently from the Union Refining Co., resumed operations last Friday and is running at capacity of 3,000 bbls. daily, according to officials of the company. T. O. Runyan, who was superintendent of the plant when it was known at the "Twin-Six," is in charge.

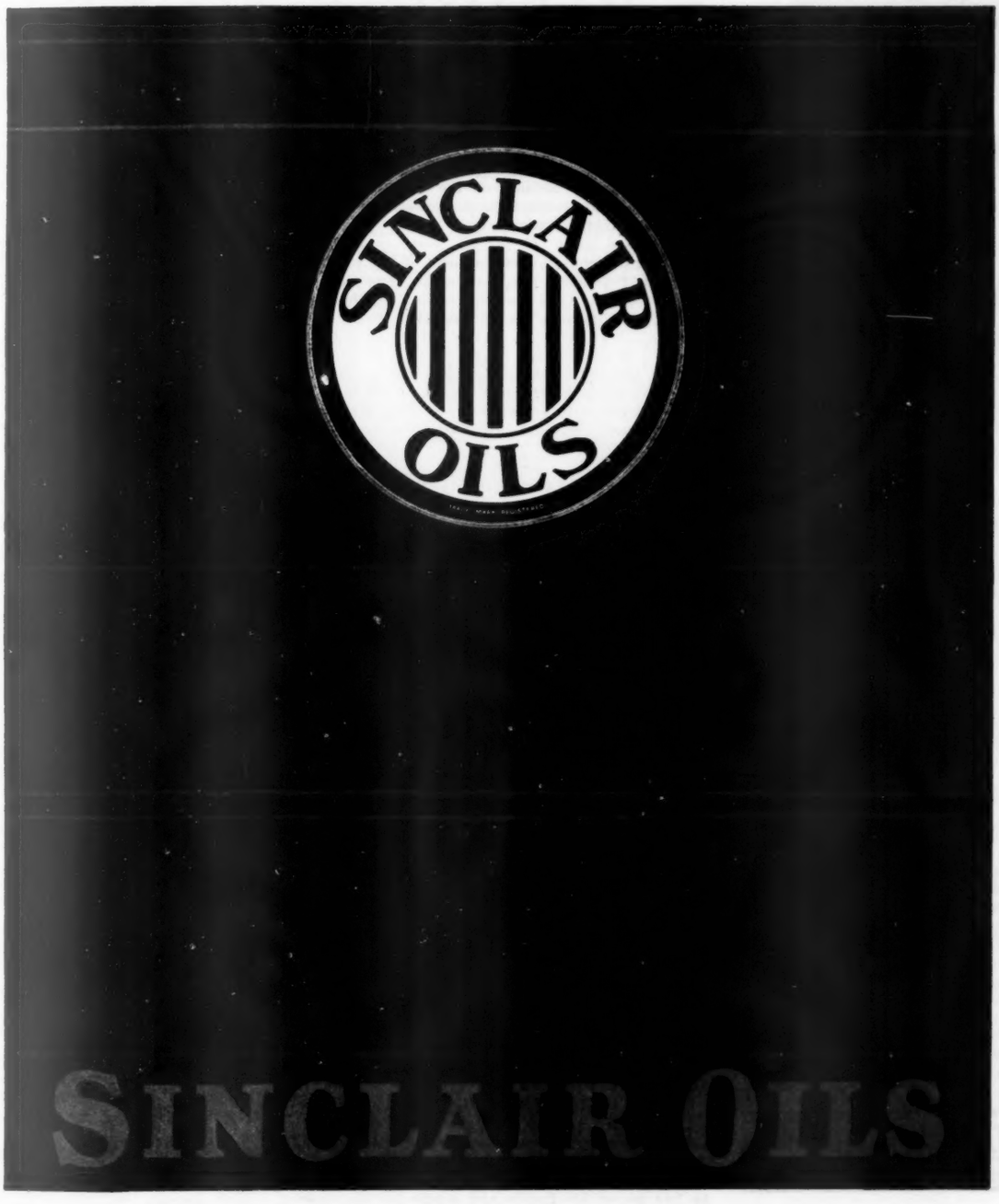
OIL AND GAS JOURNAL'S ANNUAL WILL CONTAIN ALL PRICE DATA

Continuing the service it inaugurated a year ago, The Oil and Gas Journal, in its annual number to be issued January 29, will present in table form price data covering weekly quotations on refined products in every section of the United States, tank wagon prices in representative cites of the country and all changes made in posted prices of crude oil in every field of the United States, giving dates on which changes were made.

This price data will be but one feature of the annual number. In addition to its usual comprehensive review of each oil field of the United States, Canada and Mexico, The Oil and Gas Journal of January 29 will publish special articles covering the producing, refining and marketing branches of the oil industry. It will also cover the leading news events of 1924 which affect the petroleum industry and will analyze these events as to their importance to the business during this year.

Detailed figures on production of all fields, the gasoline output and consumption, probable production of different areas and the entire country for 1925 and other features of vital interest to every person connected with the oil business will be included in this issue which is expected to be the best and most comprehensive of its kind ever published by any petroleum trade publication.

Also in line with its policy which has always been adhered to rigidly, there will be no advance in price for this annual number. It will be sold for 15 cents as is every issue of The Oil and Gas Journal.



ONE of our responsibilities, represented by the Sinclair trademark, is to maintain a supply of crude oil which amply protects our sale of refined products. This is done through our affiliated companies, and gives our customers a feeling of security that their orders will be filled promptly.

SINCLAIR REFINING COMPANY

New York: Sinclair Oil Bldg., 45 Nassau St. Chicago: 111 West Washington St.

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MEN KNOWN IN OILDOM

R. M. Goldsborough

R. M. Goldsborough of Pittsburgh, Pa., better known as Martin, has been elected to the office of vice president and general manager of the International Supply Company. He will assume his new duties the latter part of January and will have executive charge of the company with headquarters in Tulsa.

Mr. Goldsborough was born in Armstrong County, Pennsylvania. His father moved to the oil country in the early days locating at Bradford, Pa., where the subject of this sketch spent his early manhood. Having secured his oil training on the derrick floors of his father's wells in McKean County, he later entered the supply branch of the industry with which he has since been continuously identified. His activities have taken him into practically every field in the country and he is widely known among the fraternity.

For a period of 10 years Mr. Goldsborough was connected with the Union Tool Company, six years of which were spent in Los Angeles as sales manager. In 1916 he was transferred to Chicago and put in charge of the plant there, later being made vice president of the company. In 1920 he resigned and removed to Pittsburgh where he has since carried on his own supply business.

In preparation for his new association, Mr. Goldsborough has disposed of all other interests in order to give his entire time and attention to the International Supply Co. He will make his home in Tulsa and his many friends will welcome his active return to the Mid-Continent Field.

PERSONAL PARAGRAPHS

Joseph Burton has returned to the Tampico, Mexico, oil fields after a short holiday at Petrolia, Ont.

* * *

O. B. Fultz, drilling superintendent for the Mills Bennett interests, has been transferred to Vernon, Tex., from the Coastal country.

* * *

Marco L. Villa and Bernardo Beikels, representatives of the Argentine Government, are making a tour of the oil fields of the country.

* * *

M. V. Rushmore, of the Okmulgee, Okla., office of the Gypsy Oil Company, spent the Christmas holidays with relatives living near Carthage, Mo.

* * *

J. G. McIntosh, of the engineering department of the Humphrey's interests, who has been in Houston, Tex., for several weeks, has returned to the Mexia, Tex., headquarters of the Humphrey Field forces.

John Sandburg, president of the Sandburg Petroleum Company, has returned to his home in Long Beach, Cal., from Salt Lake City, Utah, where he spent the holidays.

* * *

R. B. Lydig, of Bartlesville, Okla., has left for Rangoon, India, where he will direct the installation of a Cross cracking plant for the British Burma Oil Company.

* * *

A. E. Watts, senior vice president of the Sinclair Consolidated Oil Corporation, has been in Mexico inspecting the properties of the Sinclair companies in the Tampico district.

* * *

John C. Ford, general superintendent of the Rocky Mountain division of the Transcontinental Oil Company, has returned to Denver, Colo., from a business trip to Oklahoma.

* * *

Walter G. Johnson, vice president of the Seaboard Midland Petroleum Corporation, is removing his office from the Atlas Building, Tulsa, to the company's headquarters at 17 Battery Place, New York.

* * *

C. V. Cromwell has been made division manager of service stations for the White Eagle Oil & Refining Company, with headquarters in Winfield, Kans. Mr. Cromwell was formerly with the Derby Oil Company.

* * *

J. W. Bowen, who formerly represented the Guiberson Corporation in the Gulf Coast territory, is now connected with the Wilson Supply Company, as salesman in Houston, Tex. He has a wide acquaintance among operators and contractors..

* * *

S. R. Cohagan, head of the land department of the Midwest Exploration Company, a subsidiary of the Midwest Refining Company, has returned to Denver, Colo., after having spent some time in Russell County, Kansas, on business for his company.

* * *

H. L. Hummel, formerly field geologist for the White Eagle Oil & Refining Company in the Okmulgee district, has been made chief geologist for his company to succeed W. G. Gish, who recently resigned to head the geological staff of the Sinclair Oil & Gas Company.

* * *

Emby Kaye, superintendent of the gasoline division of the Skelly Oil Company, was married recently to Miss Aline Meyer of Lake Charles, La. The couple are visiting Miami, Fla., and Havana, Cuba, on their honeymoon ,and will return shortly to Tulsa to make their home in that city.

* * *

Dean C. Winchester has been selected president of the Rocky Mountain Association of Petroleum Geologists. A. W. McCoy, vice president of the Marland Oil Company of Colorado, was made first vice president; E. R. Lloyd, second vice president, and C. M. Rath, secretary. The association meets bi-weekly in Denver.

* * *

R. E. Wertz, general manager of the Producers & Refiners Corporation in the Rocky Mountain region, was a visitor of Casper, Wyo., looking after the transfer of his household goods to Parco, where he has moved his family and where he will make his headquarters, due to the moving of the Casper offices of that firm to Parco.

* * *

William Polje, who for the past five years has acted as assistant sales manager and advertising manager of the Skelly Oil Company, at El Dorado, Kans., and Tulsa, has joined the Central Advertisers' Agency of Wichita, Kans. Mr. Polje will devote most of his time to the refining division of the oil business in the Mid-Continent.

* * *

It is reported the Marland Oil & Refining Company will remove its Texas headquarters from Dallas to Houston about February 1 The company now maintains offices at Houston with A. M. Duessen in charge of the land, leases and drilling, and David Donoghue as assistant. Both men are geologists of recognized ability and both are thoroughly familiar with saline domes and the other conditions peculiar to the Gulf Coast region.

Palmer Hughes, vice president and sales manager of the Clayton Oil & Refining Company, Dallas, spent several days last week in Tulsa and other Oklahoma points.

* * *

John M. Dullahan, of Houston, Tex., an independent operator, was looking over the new field in Jim Hogg County and the other Laredo districts.

* * *

R. A. Brett, vice president and general manager of the Brown-Woodward Oil Company, of Minneapolis, Kans., announces the opening of offices in the New Wright Building, Tulsa.

* * *

Sidney Powers, chief geologist of the Amerada Petroleum Corporation, with headquarters in Tulsa, attended the annual meeting of the Geological Society of America at Ithaca, N. Y.

* * *

W. M. Porter, Findlay, Ohio, auditor for the Illinois Pipe Line Company, spent the holidays with friends in Pittsburgh. Mr. Porter was formerly connected with the Southwest Pennsylvania Pipe Line Company.

* * *

W. T. Funk, general manager of the Carter Oil Company's interests in Wyoming and Colorado, was a visitor in Pittsburgh, Pa., last week. He expressed himself as optimistic over the outlook for great improvement in general conditions in the oil industry within the next six months.

* * *

C. Max Bauer, chief geologist of the Midwest Refining Company in Montana, and J. E. Redburn of the land department, have returned to Great Falls, Mont., from a conference in Denver of the officials of the land department regarding the program of exploration in Montana in 1925.

* * *

Art Sellery, field superintendent of the Ohio Oil Company in New Mexico, was in Casper, Wyo., for a short business visit. Mr. Sellery has been connected with the Ohio Oil Company since that firm first entered the Rocky Mountain region, and is well known and liked throughout that part of the country. He is now located at Carlsbad, N. M.

* * *

Prospects for the Mid-Continent refiner in 1925 are favorable, according to V. E. Bolene, secretary of the Bolene Refining Company, Enid, Oklahoma, who spent several days last week in Tulsa. Mr. Bolene, who is one of the veteran refiners of Oklahoma, is confident the coming year will not see a duplication of the unfavorable market developments of the past two years.

* * *

Announcement is made of the resignation of George D. Paine as district manager of the Frick-Reid Supply Company, in the Rocky Mountain region effective February 1. Mr. Paine has been the company's manager in that territory for three years with Casper headquarters. After a rest he will probably devote most of his time to looking after his personal interests. For the time being the business of the company will be managed by Mr. Paine's assistant, C. E. Dowd.

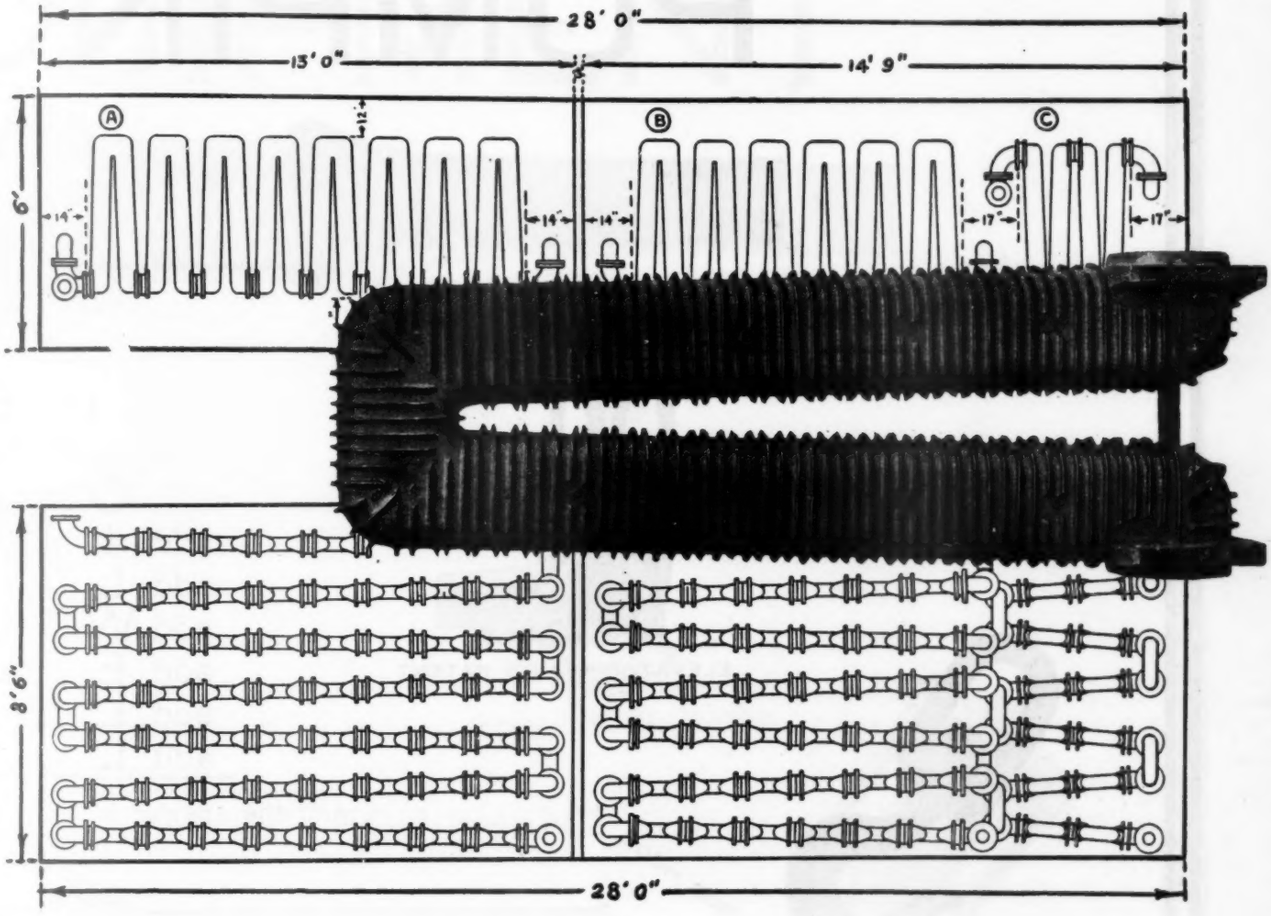
* * *

F. D. Williams, president of the National Transit Pump & Machine Company, of Oil City, Pa., a subsidiary of the National Transit Company, called on pipe line officials in Texas during the week and later left for Shereveport, La., accompanied by W. H. Gaither, representative of the pump and machine company in Texas, Louisiana and Arkansas. Mr. Williams is one of the prominent pipe line officials in the Eastern fields and meets many old friends in the Mid-Continent and Southwestern oil fields.

* * *

Charles Shumaker, who has been associated during the past 25 years with the several eastern pipe line companies at Oil City, Bradford and Pittsburgh, has resigned his position as president and general manager of the Crescent Pipe Line Company, effective January 1, and will retire to private life under the company's plan of annuity. Mr. Shumaker expects to move his family to Meadville, Pa., at which place he will reside permanently after May 1. L. E. Lockwood, vice president, has been elected president and general manager and C. T. Vandergrift, chief engineer, has been elected vice president.

How STERLING RUN-DOWN SECTIONS can be installed as a continuous condenser



THE above installation is used for cooling liquids or condensing and cooling the heavy ends.

For complete details covering this effective new use of Sterling Run-Down Sections, write to the address below.

Essential Data of the new Run-Down Section

Weight, 185 lbs.
Contains 19½ sq. ft. per section
Length, 45 11/16" over all
Width, 16" over all
Thickness, 7⅞" over all
Flanged openings, 4"
Companion Flanges tapped, 4"
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French Point of View on Petroleum

Naval Delegate to America for Fuel Oil Supplies Interprets Oil Policy of His Country and Predicts Increased Demand

By P. Vaschetto
Lieutenant Commander Engineer, French Navy Delegate to the U. S. A. for Fuel Oil Supplies

Recently, on the occasion of my visit to the Tulsa Exposition, The Oil and Gas Journal was kind enough to ask me for a few words about my country from the petroleum business point of view.

Navy men, as a rule, are not very efficient at speech making or at article writing; I am not; furthermore, I realize that it will be quite a task for one who has been in the oil business for only a few years to say something interesting about petroleum.

However, having been in contact with the oil business in the United States for more than five years, and having followed, very carefully, the course of events in the petroleum field in my own country, I will endeavor to write a few words for The Oil and Gas Journal, first apologizing if your readers readily assume that this article was not written by a professional newspaperman, but by one who knows very little and is not even accustomed to tell publicly the little that he knows.

I will divide my subject into two parts:

1. To what extent is France a consumer of petroleum products, and to what extent will she be in the future?
2. What is France's policy in regard to petroleum questions?

France As a Consumer

I will take up the first part by referring to the tables given below. The figures are the official ones sent to me by my principals in Paris.

We see from them that the number of motor vehicles increased tremendously from 1922 to 1923; that the gasoline consumption doubled from 1919 to 1923; that the fuel oil and gas oil consumption increased from a few thousand tons in 1919 to more than 100,000 in 1923.

These figures show decisively that France is on the road to recovery after the hard times occasioned by the late war. We are looking now for the modernization of our vehicles, of our industries, of our merchant marine, and of our navy also. That means more automobiles, more Diesel engines, more boilers, burning fuel oil.

Exportation is not, as everybody knows, a big item of the American petroleum industry. When comparing the figures of domestic consumption of the United States and those of exportation, the latter are surprisingly small.

The export business, however, is going to grow constantly. You can spare here enough petroleum products to satisfy the thirst of a developing Europe. Your technical men are ready to turn out more and more gasoline, more and more lubricating oil from the same amount of crude oil taken from the ground.

Nobody doubts that the export business is profitable; see what England reaped by exporting her coal all over the world during the last century. The British flag went with her coal to the most remote parts of the earth and returned bringing to England money, power and glory to boot.

It is well known that you Americans do not care about power so long as no one tramps on your toes; neither do we. You do not want to rule the seas as long as your ships are free to go where they please without undue interference, but I am sure you do not want anybody to take from you that part of the mondial market which belongs to you.

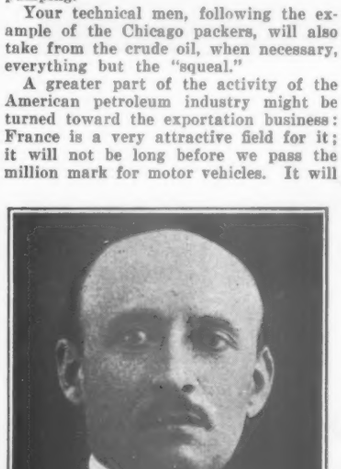
Look to America

It is on this account that you should give special attention to the increasing figures of French consumption of petroleum products.

In spite of all that has been said, you have no shortage of crude oil; you know that when all your existing and future wells will be unable to give a barrel of oil by pumping, some other process—mining by galleries as we do at Pechelbronn (Alsace) for instance—will enable your great grandchildren to take out of the ground four times as much oil as would have been taken before by gushers and pumping.

Your technical men, following the example of the Chicago packers, will also take from the crude oil, when necessary, everything but the "squeal."

A greater part of the activity of the American petroleum industry might be turned toward the exportation business: France is a very attractive field for it; it will not be long before we pass the million mark for motor vehicles. It will not be long before our merchant marine will turn mostly to motor ships and oil burners.



L. Pineau
Head of French Government Bureau of Petroleum.

Certainly we shall need and ask for more and more petroleum products. You will have more and more to sell. Petroleum refining is a rough process yet, scientifically speaking, but you will improve it to such an extent that the quantities of finished products from the same amount of raw material will be at least twice as much as they are now. You will then be in need of an outlet—to be found in exportation.

Unfortunately your fields of production and your refineries are often very distant from the doors open to us, i. e., your sea terminals. The refineries situated near the sea are interested in the export business: those situated inland are not, and cannot be, on account of the extra expense involved in transportation.

The amelioration of transportation from inland to sea terminals, and the reduction of expenses of such transportation, will be a great improvement for your export business; the inland producers will then have, like the owners of sea terminals, a safety valve constituted by the foreign business which will help to regulate and stabilize the whole of your petroleum industry.

French Petroleum Policy

The second part of my subject is a little more difficult than the first. I was tempted to pass it by but will not because I have too often seen erroneous statements in the American press concerning the petroleum policy of France.

To deal authoritatively with this question will require at least a learned diplomat, and I am not a diplomat. My only title to talk about the subject is that I have steadily followed what has been going on in my country concerning the petroleum question; I have also had some conversations and correspondence with official Frenchmen who are interested in it, while I have read almost everything which has been written recently on the subject in American reviews and newspapers.

I will first speak of the French statute for mine exploitation. We call it "Regime Minier" under which comes the development of possible petroleum fields in France and French colonies.

We have a law dating as far back as 1810, which governs the exploitation of the French underground. This law is still in force and we have found from long experience that it was in its principle at least very wise and very profitable for us.

I am sure no one here will contest our right to stick to a law the wisdom of our forefathers transmitted to us. This is not a law that was made quickly, under the rush of circumstances, but a law which for more than a century has given us satisfaction—we have many like that.

This law states among other things, that the French Government has the discretionary power to give mining concessions to whomever they judge the right one for sensible exploitation. No one, French or foreigner, has the right to exact for money or other considerations, a mining concession from the French Government.

This law has been amended to fit the petroleum researches by a law dated December 1922. The purpose of the legislators is principally to give concessions to those who intend serious and actual prospecting and not to those considering the grabbing of permits for speculation.

No Discrimination

I read some time ago in an American newspaper, a sharp criticism against our "Regime Minier"; it was said that the French Government was discriminating against American interests, that France and the French colonies were closed against American exploitation more than any other territory of the earth. This is at least, erroneous. I am not quite sure, but to the best of my knowledge, no American concern as yet has positively asked for a concession for petroleum exploitation in our territories. I may add that if any should do so they would receive from the French Government a fair consideration, as fair a one as a French concern would receive. Evidently we have our laws to obey, but the law in that particular case is the same for a Frenchman as for an American.

Another point on which we have been criticized is the regulation of petroleum business in France, viz: our "Regime Interieur du Petrole."

A law, first introduced in 1921, is said to give control of the petroleum industry in France to the Government. This law was voted by the Chamber of Deputies in April 1924, and the Senate will pass on it in the near future.

You must know of what this control, called by some "government monopoly" consists: The gist of it is, full freedom of commerce restricted only by obligation to constitute stocks for government use, this with a view to having some ready and sufficient supplies in case of urgent need. Every petroleum concern, French or foreign, is under this obligation—there is no discrimination whatsoever.

No Government Monopoly

This law provides an "office national des combustibles liquides," the powers of this office being very carefully limited. A wide field is open to it with a view to helping the petroleum industry in France, but it must not hamper or compete with the petroleum industry. Anything purely commercial is forbidden to that organization—they cannot sell anything—they cannot interfere with prices of petroleum products in France—their principal duty being to give information, to study, to help, to look after what will be best for France's interests, to give advice to the legislators. No more Government control than you have here, only a few regulations which are more than needed.

Much may be said also about several wrong interpretations of the famous "pact of San Remo." According to these hasty interpretations, discriminations were made against Americans all along the line. A careful study of the stipulations will show it was only on the subject of Mesopotamia that some "discrimination" could have been found. For all the other territories, no special privilege was given to any one. Furthermore, the controversy about Mesopotamia seems to have been later settled satisfactorily to American interests. I am sure no one is more pleased concerning this satisfactory settlement than France.

France would really view with pleasure American concerns giving their collaboration to our petroleum problems; that is our heart sentiment and our policy. You have experience, why shouldn't we be glad to see you coming to work with us?

Quotes Mr. Bedford

I remember reading what A. C. Bedford wrote last year on the subject of collaboration. It was very much appreciated in France. With the high authority attached to his name, Mr. Bedford wrote, if I remember correctly, that the solution of the great mondial petroleum problem is in the sincere collaboration of the several national interests on the exploitation of the world resources, the open door, allowing capital from whatever source to be invested with equal rights and protection, with equal risks for such exploitation.

France agrees heartily with that.

We do not contemplate national monopoly or monopoly reserved for some few nations. What is said against that, through insufficient knowledge of the exact facts, is inaccurate, the everyday happenings proving it.

To sum up this second part, I would say that before giving credit to anything when such big words as "monopoly," "discrimination" etc., are used in speak-

(Continued on Page 125)

France's Consumption of Petroleum Products
(Quantities in metric tons of 2,204.60 pounds)

Products—	1919	1920	1921	1922	1923
Crude oil	441	3,699	371	1,510	1,000
Kerosene	270,105	303,605	196,844	210,954	297,633
Gasoline	310,505	465,678	409,915	551,888	727,679
Lubricating oil	147,259	226,207	117,749	187,175	204,353
Gas oil, fuel oil	5,618	47,661	47,863	77,068	113,654
Pitch	.....	3,465	2,406	1,836	4,216
Paraffine	11,176	4,598	1,148	2,987	4,916
Petrolatum	832	929	111	81	180

North-Central Texas Field

By Dan F. Dugan

Completions less than one-fourth of those a week before. New production only 852 bbls. New pay horizon found at South Vernon Fool by Bridwell and others' No. 2 Stephens, at 2,275 feet, flowing 300 bbls. through several feet of mud in hole. Gulf Production Co.'s No. 5 Oil Investment Co. makes 580 bbls.

FORT WORTH, Tex., Jan. 5.—With the North Central Texas oil fields still in the grip of cold weather and the holidays hardly passed, the fields have suffered an unusually heavy decline in production, completions have dropped to probably the lowest for any week in several years and there are still hundreds of drilling operations shut down all over the territory. Probably not since this territory became an important oil producing district have field operations been so thoroughly paralyzed.

Production for the week ending Thursday shows a decline of nearly 15,000 bbls. in daily average. The total of production averaged 119,815 bbls. compared with a daily total the previous week of 134,690 bbls., a decline of 14,875 bbls. This decline, however, is due mainly to wells being shut down and production promises to resume normal again as soon as weather conditions will permit and operations are resumed.

Every district in the territory showed a loss in production with the single exception of Stephens County which showed a gain of 85 bbls. Losses were extremely heavy in some of the fields, particularly in Burkburnett and in Archer County. Burkburnett lost 4,135 bbls. in daily average runs during the week while the Iowa Park district, including Archer County lost 8,565 bbls. The Electra district lost 1,435 bbls., Eastland County recorded a loss of 50 bbls. and the wildcat districts suffered a loss of 775 bbls.

Completions for this week were less than a fourth of a week ago. Total wells completed for the week were 12, 10 oil producers and 2 dry holes. New production for the week totaled only 852 bbls. compared with new production the previous week of 3,940 bbls.

Archer County completed only eight wells compared with 26 completions the week before. Seven of the eight completions were oil producers, one being a dry hole. New production in Archer County totaled 805 bbls. Wichita County had only three completions, two producers and one dry hole. The county recorded only 22 bbls. of new production. Neither Young, Stephens nor Eastland County reported any completions. The only wildcat completion during the week was a 25-bbl. well in Palo Pinto County.

If anything the drilling report for the week accounts for less activity than does either the completions or production report. Out of 64 drilling operations in Wichita County only 6 are actually active. Out of a possible 134 active operations in Archer County only 14 are really active. In the southern end of the territory operations are slightly more active. In Stephens County with considerably less work due than in Archer County, 27 operations are listed as active. There is also a considerably larger percentage of the wells in Eastland County that are actually under fire.

South Vernon Field

Right at present the South Vernon Field in Wilbarger County is showing considerable activity. A very important new pay horizon is reported to have been uncovered during the week by Bridwell and others in their No. 3 on the Stephens land. The well had failed to make a producer at the regulation depth between 2,020 and 2,040 feet and started out to explore the lower levels. A good showing was reported at 2,170 feet but this was passed up and a new sand encountered at 2,275 feet. When tested the well flowed about 300 bbls. through several hundred feet of mud in the hole.

This is the deepest pay so far discovered in the South Vernon Field and should it develop commercial production will in all probability be responsible for the redrilling of a number of wells in the district that failed of production at the higher and customary levels. The well is in the northwest corner of Section 83, Stephens land and to the east of the company's No. 1 Stephens. At present the well is having trouble with the casing seat and completion will probably be delayed until the casing can be cemented.

While not yet listed as a completion the Winnipeg Oil Co.'s No. 4 Bond in the South Vernon Field is showing for a good producer. It is making an estimated production of 450 bbls. from a total depth of 2,060 feet. The first sand was encountered at 2,000 feet, drilled to 2,016 feet, where a break was found. The well is in the northeast corner of Section 10.

Humble Company Investments

The Humble Oil & Refining Co. is reported to be making some rather extensive investments in the South Vernon district. The company is reported to have recently purchased a 40-acre tract from Zipperle and others for a consideration of $500 per acre. The land is in Section 84, just to the east of the producing group of wells in the South Vernon Pool.

It is reported the Humble is making preparations for the construction of a casinghead gasoline plant in the South Vernon Pool. The plant will consume between 700,000 and 1,000,000 feet of gas daily and will be supplied from the gas wells recently completed. It is said that in order to more easily handle the output of the plant a 2-inch pipe line is to be laid from the field to a loading rack to be built on the Fort Worth & Denver railroad. The plant will cost between $200,000 and $250,000 when completed and fully equipped.

South Archer County

The Gulf Production Co. has a showing for a fine producer in No. 5 Oil Investment Co., in the South Archer County Pool. The sand was encountered on New Year's day at a depth of 1,102 feet and when drilled only a few feet the well filled with oil and began flowing by heads. The well swabbed and flowed about 580 bbls. during the first 24-hour test.

The Texas Co. has started construction of its 6-inch line to the South Archer County district. The line will be built from the company's main station in the Wilmot Pool and will have a length of approximately 21 miles. The line will serve the greater part of the productive area of Archer County. After reaching the Cary Pool it will be extended west 8 miles to include the Harmel Pool. The company it is reported also has plans for extending this line into northern Young County to serve the new prospective area recently opened by the bringing in of the No. 1 Gambrell wildcat of Murchison and others. A main pumping station will be built in the Carey Pool where material and machinery are already on the ground.

The Petroleum Producers No. 1 Howard in the northern part of Montague County reported last week to be showing oil is now showing for a fair producer. The sand was topped at 1,388 feet and drilled in a total of 40 feet. On a 24-hour test the well was said to have made between 90 and 100 bbls. This is considerably deeper than other producers in the north Montague or Nocona Field. Other production there is secured at around the 900-foot level. The Howard well is also showing for a better producer than the shallower wells.

Completions

Wichita County

Pace and others' No. 1 Roller, dry at 1,750 feet; Drillers Development Co.'s No. 6 Douglas, 10 bbls. at 1,065 feet; Howell and others' No. 2 Burnett, 12 bbls. at 835 feet.

Archer County

Verschoyle and others' No. 8-B Wilson, 35 bbls. at 1,400 feet; Carey and others' No. 2 Logan, dry at 1,300 feet; Consolidated Oil Co.'s No. 6 Bearden, 30 bbls. at 1,080 feet; same company's No. 2-B Davis, 40 bbls. at 1,085 feet; same company's No. 4-C Ragle, 50 bbls. at 1,085 feet; Fisher and others' No. 1 Rogers, 350 bbls. at 1,375 feet; Mutual Oil Co.'s No. 2 Harmel, 150 bbls. at 1,225 feet; Ray and others' No. 8 Hausler, 150 bbls. at 1,120 feet.

Wildcat Completions

Palo Pinto County: Pender Production Co.'s No. 2 Slemmons, 25 bbls. at 3,550 feet.

Drilling Operations Wichita County

Baldwin and others' No. 1 Hefley, drilling at 1,070 feet; Magnolia Petroleum Co.'s No. 108 Reilly, cleaning out at 1,265 feet; same company's No. 109 Reilly, driling at 250 feet; same company's No. 41 Beach, drilling at 860 feet; Stump Oil Co.'s No. 1 Chilson, drilling in shale at 1,650 feet; Wichtex Oil Co.'s No. 1 McFall, drilling in shale at 1,400 feet.

Archer County

Hobbs and others' No. 1 Lane, showing oil at 1,445 feet; Sun Oil Co.'s No. 6 Farmer, underreaming. Christie Brothers' No. 1 Campbell, drilling in rock at 650 feet; Consolidated Oil Co.'s No. 7-A Davis, oil showing at 1,055 feet; same company's No. 8-B Ragle, oil showing at 1,070 feet; Harris and others' No. 1 Brown, drilling at 760 feet; Midway Development Co.'s No. 1 Morrison, drilling at 770 feet; Petroleum Production Co.'s No. 1 Hausler, drilling at 1,050 feet; same company's No. 2 Hausler, drilling at 780 feet; same company's No. 3 Hausler, drilling at 300 feet; Ray and others' No. 12 Hausler, drilling at 1,075 feet; Shamrock Oil Co.'s No. 5-C Richardson, drilling in rock at 500 feet; Shaw and others' No. 1 Hayter, hole full of oil at 1,305 feet; The Texas Co.'s No. 3 Jeske, being placed on pump at 1,150 feet.

Young County

Dunn and others' No. 1 Craig, fishing at 500 feet; Kentucky Oil Corp.'s No. 1 Kilcrease, setting casing at 1,020 feet; Murchison and others' No. 1 Gambrell, putting on pump at 1,215 feet; Pois and others' No. 1 Dietrich, drilling at 1,070 feet; Sims Oil Co.'s No. 1 Carpenter, being placed on pump at 1,025 feet; Vance and others' No. 1 Daws, fishing at 3,025 feet.

Stephens County

Critten and others' No. 8 Cobb, drilling in shale at 2,100 feet; Mid-Kansas Oil & Gas Co.'s No. 15 Hill, drilling at 1,070 feet; same company's No. 3 Hill, account 2, setting casing at 2,840 feet; same company's No. 11 Tullos, account 1, drilling in lime at 3,720 feet; Pender Production Co.'s No. 3 Keel, drilling at 3,170 feet; Prairie Oil & Gas Co.'s No. 15 Atkins, fishing at 3,285 feet; same company's No. 2 Caldwell, cleaning out at 3,285 feet; Republic Production Co.'s No. 2 Knox, drilling in lime at 3,560 feet; Snowden & McSweeney's No. 5 Higginbotham, fishing at 3,175 feet;

(Continued on Page 66)

East Central Texas

By Staff Correspondent

MEXIA, Tex., Jan. 3.—Events of the past three days have filled the air with diverse opinions as to the length and breadth of the Wortham producing area, the peak production of the field and its ultimate output of oil. The fact that the field is yet very young and that little of it has yet been proven and that therefore no man has any sound basis for either pronounced optimism or pessimism means nothing to the prophets. One can get any kind of an argument as to the future of the Wortham Field. but the predominant thought just at this writing is that Wortham is not looking as good as it was two weeks ago.

On Saturday morning there were 23 wells in the field with a total production around 85,000 bbls. a day. Only 21 wells were flowing, two having quit.

The Boyd Oil Co. has pinched in its Nos. 1, 3, 4, and 6 Simmons to 11,865 bbls. a day because of the rising temperature of the oil. The company's No. 2 on the Simmons lease quit flowing. The Boyd Oil Co.'s No. 5 on the Simmons farm started at 6,000 bbls. from sand at 2,943-62 feet but was choked down. The Boyd Oil Co. is actively soliciting production, offering gas for drilling purposes as an inducement for operators to sell the company all or a part of their production. The Boyd organization has contracted to deliver 3,000,000 bbls. to the Prairie Oil & Gas Co. and 1,000,000 bbls. to the Sinclair Crude Oil Purchasing Co. and is engaged in tank construction to go through with its program of building and filling fifty 55,000-bbl. tanks with crude which Col. A. E. Humphreys, president of the Boyd Oil Co., believes can later be sold at a good profit.

That the company is trying to buy outside oil is taken in some quarters to mean that it is not certain of its ability to produce the required amount of oil from its own leases. It may mean nothing of the kind, of course. The Boyd's attempt to purchase crude may be based solely on Colonel Humphreys' optimism in the future of the crude market. He may be trying to clean up his contract requirements which are based on a flat $1.25 price while the market is at that figure, because he is firm in his belief that by mid-year the crude market will be substantially higher.

The Mutual Oil Co.'s No. 1 on the Mrs. J. J. Manning 24-acre farm in Freestone County, bailed dry at 3,001-19 feet. It had no salt water showing and might find production deeper. This well is located just east of the H. & T. C. right of way and 1,250 feet east of a line drawn between the Boyd Oil Co.'s No. 1 Boyd and No. 1 Simmons and if it proves dry it will narrow down the supposed width of the field. Wortham was believed to have a half-mile width of pay and any diminishment of this will be taken to mean a relative lessening of its

(Continued on Page 76)

Oklahoma Field Operations

By C. D. Lockwood

Three new wells in the southeast corner of Cromwell brought in with total initial production of 2,469 bbls.; Houston Oil Co. gets a good one despite predictions of poor well. Gilcrease-Papoose district has three dry holes, while Tonkawa Field has one new producer and two apparent failures.

The Cromwell Field, in Seminole County, had three more producers added to it on the southeastern edge during the past week with a total initial production of 2,469 bbls. The Gilcrease-Papoose district did not fare so well; three failures were recorded from that vicinity. Considerable interest is also being focused on the Tonkawa Pool, where the Carter Oil Co. is having rather poor success in the northwest quarter of Section 35-25-1w; while one well was making a very poor showing, there is a hole full of water on the same property, one location west. The Amerada Petroleum Corp. has met with better success, however; that company's No. 39, NW cor. NE, Section 34-25-1w, made 1,730 bbls. in 18 hours. The well is one location north of the same company's No. 38, which, before the completion of No. 39, was the farthest northwest well in the field.

The Cosden Oil & Gas Co.'s No. 7 Yarhola, C NE SE SE, Section 15-10-8, in the southeastern part of the Cromwell Field, produced 1,080 bbls. the first 24 hours after it had been drilled to 3,520 feet in sand topped at 3,490 feet. The Houston Oil Co.'s No. 1 Harjo, SW cor. NE SE, Section 15-10-8, proved a happy surprise for its owners. The prevailing opinion was before it came in that it would not make a very good producer; it topped sand at 3,472 feet, and when drilled to 3,513 feet, flowed 45 bbls. an hour. The Gypsy Oil Co.'s No. 1 Curley, NW cor. SE SW, Section 14-10-8, the farthest east well in the field, made 82 bbls. the first 24 hours from sand at 3,519-37 feet, and on Sunday swabbed 130 bbls. The Roxana Petroleum Corp.'s No. 2 King, C SE NW SW, Section 14-10-9, northwest of the Gypsy well, was making 309 bbls. from sand at 3,520-28 feet, which is not so deep into the sand as the Gypsy well.

Papoose Operations

Recent operations in the neighborhood of the Papoose Field have not been so successful as in the Cromwell Field. Bingham & Smith's No. 1 Sawyer, SW cor. NW NE, Section 26-10-9, 1½ miles north of the Papoose Field, was filled with water from sand topped at 3,421 feet; drilling was stopped at 3,425 feet. T. B. Slick's No. 3 Sands, C SW SE SE, Section 35-10-9, on the northeast edge of the Papoose Pool, had a show of oil, but drilled into water at 3,365 feet; the owners will plug it back to 3,361 feet. T. B. Slick's No. 4 Sands, C SE SW SE also is not looking so good; cap rock was reached at 3,332 feet, and at 3,351 feet it had a show of gas but no oil. T. Atkins' No. 1 Easup, C NE NE NE, Section 23-9-8, 5 miles southwest of the Papoose Pool, in Hughes County, was full of water from sand at 3,490-3,510 feet.

The Comar Oil Co.'s No. 9-W Gaume, NW cor. SW NE, Section 2-24-1w, on the southeast edge of the present deep sand production area of the Tonkawa Pool, Noble County, topped sand at 4,005 feet, and at 4,015 feet made 557 bbls. natural; deepened to 4,060 feet, it was making 798 bbls. The Carter Oil Co.'s No. 12, SE SW NW, Section 35-25-1w, on the northeast side of the pool, topped sand at 4,124 feet, and at 4,154 feet had 2,000 feet of oil in the hole. At 4,190 feet, there were 2,500 feet of oil in the hole, and the outlook is not bright for further development on that side of the pool. The same company's No. 11, SW cor. NW, had water at 4,030-50 feet, but will drill on. The Amerada Petroleum Corp. continues to extend the field in the northwesterly direction. Its No. 39, NW cor. NE, Section 34-25-1w, found the deep sand at 4,138 feet, and after the bit had reached 4,179 feet, made 1,730 bbls. the first 18 hours.

The Twin State Oil Co.'s No. 1 Moore, C SE SE SE, Section 17-29-1w, in the Braman Pool, Kay County, got a hole full of water from sand at 2,575-2,662 feet, and at 2,680 feet was straight-reaming for the 8¼-inch casing to go deeper.

The Homaokla Oil Co. was moving in tools for a 4,000-foot test in the NW cor. SW NE, Section 33-5-8, on the northwest edge of the Allem Pool, in Pontotoc County.

J. L. Donahoe's No. 1 Zoldolski, NW cor. SE, Section 22-23-4, was flowing 175 bbls., and had not yet been deepened. The F. & N. Oil Co. was starting a rig for the northwest offset to the discovery well, and the Prairie Oil & Gas Co. had a rig up for west offset, NE cor. SE, Section 22-23-4.

During the week ending December 27 there were completed in the entire State 24 oil wells, a dcrease of 17 from the previous week; 4 gas wells, compared to 12 in the previous week; 12 dry holes, 16 less than the week before. The initial production of the new wells was 8,367; the initial production of the wells completed the previous week was 18,103 bbls.

Tonkawa Production

The daily average production of the Tonkawa Field during the week ending Dec. 29, was as follows:

Company—	Wells	Bbls.
Amerada Petroleum Corp.	39	10,675
Blackwell Oil & Gas Co.	33	6,295
Carter Oil Co.	5	138
Champlin Refining Co.	2	10
Champlin Refining Co. and Twin State Oil Co.	1	6
Comar Oil Co.	345	33,794
Cosden Oil & Gas Co. and Marland Oil Co.	18	242
Gypsy Oil Co.	104	16,590
Healdton Oil & Gas Co.	28	1,212
Wentz Oil Corp.	47	13,589
McMan Oil Co.	1	3
Pennok Oil Co.	32	7,029
Phillips Petroleum Co.	3	556
Prairie Oil & Gas Co.	12	471
Sinclair Oil & Gas Co.	1	7
T. B. Slick and Comar Oil Co.	36	6,390
Southwestern Petroleum Co.	15	559
The Texas Co.	5	26
White Eagle Oil & Ref. Co.	7	138
Total	734	97,720
Total last week	731	100,498
Difference	3	2,778
Deep Sand Production		
Amerada Pet. Corp., Goltry	6	9,877
Pennok Oil Co., Endicott	7	5,821
Comar Oil Co., Beverlin	3	8,184
Comar Oil Co., Pettit	3	1,184
Comar Oil Co., L. Endicott	4	2,867
Comar Oil Co., E. Endicott	8	12,167
Comar Oil Co., Gaume	3	1,438
Gypsy Oil Co., Shawver	11	14,882
T. B. Slick, Endicott	7	4,951
Blackwell O. & G. Co., McDaniel	4	5,450
Wentz Oil Corp., McKee	5	12,420
Phillips Pet. Co., McDaniel	1	498
Total	61	79,739
Total last week	58	81,825
Difference	3	2,086

Daily average pipe line runs from the Tonkawa Field for the week ending December 29 were as follows: Kay County Pipe Line Co., 32,601 bbls.; Ozark Pipe Line Co., 17,011; Gulf Pipe Line Co., 16,060; Champlin Refining Co., 10,695; Bolene Refining Co., 3,485; Globe Refining Co., 3,666; Moore Refining Co., 6,997; Producers & Refiners Corp., 977; Oklahoma Pipe Line Co., 142; Empire Pipe Line Co., 1,764; Golden Rule Oil & Refining Co., 481; Illinois Pipe Line Co., 2,080; Cosden Pipe Line Co., 2,021.

Production in Burbank

The daily average production for the week ending December 31 in the Burbank Field, was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	225	9,879
Cosden Oil & Gas Co.	105	2,828
Comar Oil Co.	7	165
Devonian Oil Co.	16	221
Gardner Petroleum Corp.	20	400
Gypsy Oil Co.	196	3,941
Kewanee Oil & Gas Co.	25	498
Laurel Oil & Gas Co.	16	241
Lorraine Petroleum Co.	15	171
Midland Oil Co.	37	1,239
Mid-Kansas Oil & Gas Co.	39	1,388
Peters & Oilphant	2	186
Phillips Petroleum Co.	112	10,935
Phillips Petroleum Co. and Delmar Oil Co.	16	1,539
Phillips Petroleum Co. and Skelly Oil Co.	175	4,278
Prairie Oil & Gas Co.	106	3,140
Producers & Refiners Corp.	29	384
Roxana Petroleum Corp.	55	569
Simons & Moore	29	131
Sinclair Oil & Gas Co.	145	2,576
Skelly Oil Co.	22	768
Tidal-Osage Oil Co.	43	701
The Texas Co.	8	669
Twin State Oil Co.	24	1,123
Total	1,467	48,070
Kay County Extension		
George Boles	3	337
Carter Oil Co.	11	1,076
Comar Oil Co.	19	862
Cosden Oil & Gas Co.	16	527
Gypsy Oil Co.	19	492
Laurel Oil & Gas Co.	5	283
Mid-Kansas Oil & Gas Co.	10	1,005
Phillips Petroleum Co.	31	3,734
Prairie Oil & Gas Co.	4	266
Pure Oil Co.	5	326
Roxana Petroleum Corp.	8	313
Dye, Tomlinson et al.	8	604
Skelly Oil Co. and Phillips Petroleum Co.	20	363
Sinclair Oil & Gas Co.	5	193
The Texas Co.	16	214
Twin State Oil Co.	15	715
Total	195	11,710
Grand total	1,662	59,730
Total last week	1,660	62,730
Difference	2	2,900

Daily average pipe line runs from the Burbank Field for the week ending December 31 were as follows: Gulf Pipe Line Co., 6,042 bbls.; Delmar Oil Co., storage, 770; Cosden Pipe Line Co., 5,071; Kay County Pipe Line Co., 3,187; Osage Pipe Line Co., 198; Oklahoma Pipe Line Co., 14,314; Prairie Pipe Line Co., 3,763; Sinclair Pipe Line Co., 2,169; Moore Refining Co, 1,398; Standish Pipe Line Co., 15,336; Empire Refining Co., 1,319; Mid-Kansas Oil & Gas Co., 2,417; Twin State Oil Co., 1,713; Ozark Pipe Line Co., 1,474.

During the week ending December 29, the daily average production of the Cromwell Field was 35,386 bbls. from 235 wells, a decrease of 2,053 bbls. and an increase of 3 wells. The Gilcrease-Papoose averaged in the same period 28,950 bbls. from 74 wells, a decrease of 1,790 bbls. and an increase of 4 wells. Wewoka's average was 12,781 bbls. from 102 wells, a decrease of 302 bbls. and a decrease of one well.

Papoose Pool

The Carter Oil Co.'s No. 1 Johnson, SE cor. Section 33-10-9, in the Papoose Pool, was making 3,000,000 feet of gas from sand at 2,910-14 feet; the 8-inch was set on the gas sand.

T. B. Slick's No. 1 Grayson, C NE NE NE, Section 3-9-9, was completed for 1,100 bbls. natural in sand at 3,307-22 feet. The same owner's No. 3 Grayson, C NW NW NE, Section 3-9-9, was completed for 400 bbls. natural in sand at 3,307-16.

The Mutual Oil Co. had a rig on the ground for No. 3 Carter, C NE NW NW, Section 4-9-9. The Cosden Oil & Gas Co. had a rig up for No. 4 Alexander, C SE SE NW, Section 3-9-9. T. B. Slick was rigging up No. 4 Grayson, C SE SE NE, Section 3-9-9. The Transcontinental Oil Co. was building a rig for No. 9 Tiger, C SE NE NE, Section 4-9-9.

Otoe Pool

The Magnolia Petroleum Co.'s No. 3 Burgman, NW cor. SE, Section 16-20-6, in the Otoe Pool, Pawnee County, drilled into a gas sand at 2,970 feet, and got oil at 3,010-21 feet. After a 40-quart shot it was good for 45 bbls. The same company's No. 1 Lesher, SE cor. NE, Section 21-20-6, was dry and abandoned at 3,043 feet.

Haley, Garber & Pulse's No. 2 Phillips, SE cor. NW NE, Section 5-23-5, spudded in 80 feet and shut down. The same company has materials on the ground for No. 1, C NE NE SW, Section 4-23-5.

Other operations in the Otoe Pool include Magnolia Petroleum Co.'s No. 2 Gowling, C SW SE SW, Section 9-20-6, drilling at 350 feet; same company's No. 4 Burgman, C NE SW SE, Section 16-20-6, rig on ground; No. 5 Lesher, NE cor. Section 21-20-6, an old well deepening, drilling at 2,825 feet; same company's No. 6 Lesher, SE cor. NE, Section 21-20-6, a twin well, rig on ground; The Texas Co.'s No. 4 Ellis, NE cor. NW NW, Section 27-20-6, spudding in.

Other Pawnee County Operations

Adamson and others' No. 1-A Signa, SE cor. NW SW, Section 32-21-8, Pawnee County, was shut down at 2,400 feet.

The Twin State Oil Co.'s No. 4 Fleming, CSL SE SE, Section 8-20-7, was good for 150 bbls. after a 30-quart shot in sand at 2,626-55 feet.

Barnsdall Oil & Refining Co. has a rig up for No. 5, CEL SE NW SE, Section 24-21-8.

In the Cromwell Field

The Empire Gas & Fuel Co.'s No. 4 Dunn, C NE SW SE, Section 4-10-8, in the Cromwell Field, topped sand at 2,392 feet, got first oil at 3,400 feet, and was drilling at 3,440 feet, producing 300 bbls.

The Cosden Oil & Gas Co.'s No. 6 Toney, C NW NE SW, Section 4-10-8, was swabbing and flowing by heads 100 bbls. from sand at 3,419-70 feet.

The Southwestern Petroleum Co.'s No. 3 Wisner, C SW SE NE, Section 4-10-8, topped sand at 3,398 feet. Drilling at 3,465 feet, it was making 90 bbls. an hour.

The Waite Phillips Co.'s No. 6 Dunn, C NE NW SE, Section 4-10-8, topped sand at 3,436 feet, got first oil at 3,445 feet, and at 3,500 feet made 20 bbls. an hour. There was no appreciable increase after a 20 and a 40-quart shot. No. 7 Dunn, C NW NE SE, Section 4-10-8, topped sand at 3,393 feet, got first oil at 3,415 feet, and at 3,456 feet was making 95 bbls. per hour.

The McMan Oil Co.'s No. 5 Little, C NW NW SE, Section 10-10-8, topped sand at 3,323 feet, oil at 3,400 feet, and drilling at 3,487 feet was making 180 bbls.

The Roxana Petroleum Corp.'s No. 3 Berryhill, C NW SE NW, Section 10-10-8, topped sand at 3,303 feet, and shut down in sand at 3,485 feet, making 40,000,000 feet of gas and 40 bbls. oil. The same company's No. 1-A Berryman, C SE NE NW, Section 10-10-8, was shut in for 40,000,000 feet of gas in sand at 3,320-3,470 feet. The total depth of the well is 3,490 feet. The same company's No. 2 Berryman, C SW NE NW, Section 10-10-8, was completed as a 40,000,000-foot gasser in sand at 3,335-3,533 feet. No. 3 Berryman, C NW NE NW, Section 10-10-8, topped sand at 3,328 feet, and from a total depth of 3,468 feet, was making 60,000,000 feet of gas and 45 bbls. per day from the upper sand. The Roxana Petroleum Corp.'s No. 2 Curley, C SE NW SW, Section 14-10-8, topped sand at 3,520 feet, and drilled to 3,538 feet, making 500,000 feet of gas and 320 bbls oil.

The Carter Oil Co.'s No. 3 Little, C SW SE NE, Section 10-10-8, was pumping 20 bbls. a day from sand at 3,488-3,569 feet.

The Mutual Oil Co. was spudding in

Which is to say—

"THE BIT"

Boys, we've a bunch out here in the shops who "know their stuff" when it comes to making good tools, and those hounds of ours out there in the fields know how to peddle 'em.

But there's a lot of times when things go "blooey" and tools just won't make hole. Then's when we want to know about it—get on the derrick floor with you—and work her out.

And when we say we'll be there we "don't mean maybe."

W. J. (Bert) Childs,
Vice Pres. and Gen. Mgr.

Reed Roller Bit Co.

HOUSTON, TEXAS

No. 2 Pierce, C SE SW SE, Section 33-11-8, and building a rig for No. 3 Pierce, C NE SW SE, Section 33-11-8.

The Pure Oil Co. was drilling at 95 feet in No. 1 Pierce, C SE SE SW, Section 33-11-8, and building a rig for No. 2 Pierce, C SW SE SW, Section 33-11-8.

The Cosden Oil & Gas Co. has a rig on the ground for No. 8 Toney, C NW NW SW, Section 4-10-8.

Payne County

The Shaffer Oil & Refining Co.'s No. 9 Laughlin, NW cor. NE, Section 2-18-5, in Payne County, an old well, was deepened to a sand at 3,263-70 feet, where it was making 8,000,000 feet of gas.

T. B. Slick's No. 1 Dunn, C NE NE SW, Section 6-19-4, was dry and abandoned at 4,194 feet.

Tonkawa Pool

The Comar Oil Co.'s No. 3-W Clements, NW cor. SE NW, Section 34-25-1w, Tonkawa Pool, was completed for 3,359 bbls. natural, oil sand at 4,158-96 feet. The same owner's No. 9 Blubaugh, C NE SW SE, Section 2-24-1w, pumped 40 bbls. from sand at 2,048-55 feet. The rig is on the ground for No. 11-W Blubaugh, NW cor. SW SE, Section 2-24-1w.

The Comar Oil Co.'s No. 12-W Clements, CEL NE SW NW, Section 34-25-1w, was drilling at 144 feet.

Kay County

The Wentz Oil Corp.'s No. 1 Thomas, NE cor. NW, Section 21-25-2w, Kay County, was dry and abandoned at 1,270 feet.

Dusters in Marshall County

Three dry holes were drilled east of Madill, Marshall County: Deese and others' No. 1 Null, NE cor. NW NE, Section 24-5s-5, 655 feet; Carpenter and others' No. 1 Arbuckle, SE cor. Section 25-5s-5, 495 feet, and Deese and others' No. 1 Arbuckle, NE cor. NW NE NE, Section 36-5s-5.

Carter County

The Magnolia Petroleum Co.'s No. 5 Harris, C SW SE NW, Section 16-1-3w, in the Sholom Alechem Pool, Carter County, found sand at 1,575-1,610 feet, total depth 1,612 feet, and was making 18 bbls. natural.

The Amerada Petroleum Corp.'s No. 3 Fish, SE cor. NW, Section 28-5s-1, found sand at 1,175-88 feet and sandy shale at 1,188-90 feet. It made 140 bbls. initially, and 110 bbls. the second day; now pumping. The same company's No. 1 Fish, NE cor. NW SE, Section 28-5s-1, is a rig; the rig is up for No. 2 Fish, C NE SE, Section 28-5s-1.

The Magnolia Petroleum Co.'s No. 11 Hefner, C SW SW NE, Section 27-2s-3w, was drilling at 1,300 feet. The Atlantic Oil Producing Co. had a rig up for No. 1-A Lahman, C NW NW NE, Section 25-2s-3w, a twin to No. 1 Simpson & Fell's No. 1 Lowry, SE cor. SW NW, Section 9-4s-2w, was spudding in; it will be drilled with a rotary. The Skelly Oil Co. was rigging up to deepen No. 1 Ward, CWL NW SE SE, Section 22-4s-2w, old depth 1,950 feet.

Stephens County

The Magnolia Petroleum Co.'s No. 1 Harris, C NE NE NW, Section 3-2s-5w, Stephens County, was drilling at 250 feet.

Canadian County

The C. & O. Drilling Co.'s No. 1 Sanders, NE cor. Section 29-11-7w, in Canadian County, was spudded in and shut down.

Sheldon Pool

The Superior Oil Corp.'s No. 2 Morey, NW cor. SW NE, Section 34-16-12, in the Sheldon Pool, Okmulgee County, was drilling at 400 feet. The Henry Oil Co. and the Noble Oil & Gas Co. are moving in a machine for No. 1 Barnett, NW cor. SE SE, Section 34-16-12.

The Superior Oil Corp. and Shelton's No. 1 Vore, NE cor. SE NW, Section 34-16-12, had sand at 2,173-83 feet, and was drilling in shale at 2,189 feet.

Osage County

The Owen-Osage Gas Co.'s No. 303, CSL SE NE SE, Section 25-28-10, Osage County, was dry and abandoned at 1,906 feet.

J. R. Hadley's No. 13, CNL SW SW, Section 14-29-11, was dry and abandoned at 2,090 feet.

The Owen-Osage Gas Co.'s No. 308, SE cor. SW SW, Section 10-27-11, was shut in with 1,750,000 feet of gas in sand at 1,847-58 feet.

E. B. Lawson's No. 10, NW cor. SW NW NW, Section 28-25-8, made 2,725 bbls. the first 24 hours from sand at 2,683-84 feet. The same owner's No. 11, NW cor. SW NW NW, Section 28-25-8, was spudded in to 200 feet and abandoned.

The Beacon Oil Co.'s No. 3, NE cor. NE SE, Section 30-25-12, was dry and abandoned at 2,208 feet.

The New England Oil Co.'s No. 11, SE cor. SW SE SW, Section 19-25-9, was swabbing 30 bbls. from the Burgess sand; the sands are at 2,269-74 feet, and 2,275-78 feet.

Steiner Brothers and Simon's No. 2, SW cor. NE SE, Section 30-24-9, topped the Bartlesville at 2,128 feet, and got oil at 2,131-48 feet. It was swabbing 40 bbls. after a 60-quart shot.

The Sand Springs Home's No. 82, CNL SE SE NW, Section 36-22-8, topped the Bartlesville at 2.312 feet and got oil at 2,320 feet; drilling at 2,345 feet, there were 1,000 feet of oil in the hole.

Other drilling operations in Osage County include Marland Oil Co. and others' No. 5, SE cor. NW SE NE, Section 16-24-8, machine up; R. E. Seaman and others' No. 1, SE cor. NW, Section 32-24-8, rig up; New England Oil Co.'s No. 12, SW cor. SE SW SW, Section 19-25-9, rig up.

Creek County Operations

Steinberger and others' No. 1 Canard, SW cor. Section 20-19-8, in Creek County, was shut in as a 2,500,000-foot gas well with sand at 2,500-2,512 feet.

The Lima Oil & Gas Co.'s No. 2 Green, SE cor. NW NE, Section 24-17-8, was completed as a gas well, with 9,000,000 feet from sand at 2,752-66 feet.

The Roland Oil Co.'s No. 2 Morrison, NW cor. NE NE, Section 25-17-8, shut in 3,000,000 feet of gas at 2,700-40 feet.

The Texas Co.'s No. 1, SE cor. SW, Section 18-17-10, was making 1,000,000 feet of gas from sand at 290-315 feet, and drilling at 365 feet.

C. L. Sherman and others' No. 1 Dickson, SE cor. NE SE, Section 19-17-10, had a 35-bbl. show at 2,110-48 feet, and was to have been shot with 120 quarts.

The Nowata Oil & Refining Co.'s No. 3 McNac, SW cor. SE NW, Section 16-16-9, had 1,500 feet of oil in the hole from sand at 3,027-34 feet.

The Peters Petroleum Co.'s No. 1 Harry, SW cor. SE, Section 4-14-10, was completed for 150 bbls. natural from sand at 3,187-96 feet.

C. F. Noble's No. 1 Cooper, C NE NE NW, Section 20-14-10, was making 325 bbls. natural from sand at 3,387-90 feet.

Ireland and others' No. 2 Freeman, C SW SE, Section 8-17-11, was making 2,000,000 feet of gas from sand at 2,034-47 feet, and was shut in.

Hall & Crider's No. 1, CSL SW NE SW, Section 8-16-12, was making 40 bbls. from sand at 2,067-2,100 feet. Suppese and others' No. 3 Marshall, CEL SE NW SW, Section 8-16-12, got oil at 2,055-2,100 feet, and was making 40 bbls. naturally; total depth, 2,115 feet.

The Shaffer Oil & Refining Co. has a rig on the ground for No. 1 Long, SW cor. NE NE, Section 6-14-9.

F. R. Billingslea has a rig up for No. 1-A McIntosh, NW cor. SE, Section 24-14-9. Quinlan & Henry have a rig on the ground for No. 1 Daniel, C NE SE NW, Section 20-14-10. The Wilcox Oil & Gas Co. has a rig up for No. 3 Scott, C SW NW NE, Section 20-14-10.

Howard & Duffield's No. 2 Worley, NE cor. SE, Section 4-16-12, was drilling at 1,740 feet.

The Eastern Oil Co.'s No. 9 Roberts, NW cor. SE SE, Section 17-15-8, was drilling at 450 feet.

The General Petroleum Engineers' No. 1 Hamilton, NE cor. Section 33-20-14, found oil in sand at 1,543-68 feet, and was good for 20 bbls. after a 20-quart shot.

The Shaffer Oil & Refining Co.'s No. 9 Laughlin, NW cor. NE, Section 2-18-5, drilled deeper, got 8,000,000 feet of gas in sand at 3,263-70 feet.

The Sand Springs Home's No. 8 Bruner, SW cor. SE SW, Section 6-19-12, got oil at 2,118-27 feet, and was making 25 bbls. natural.

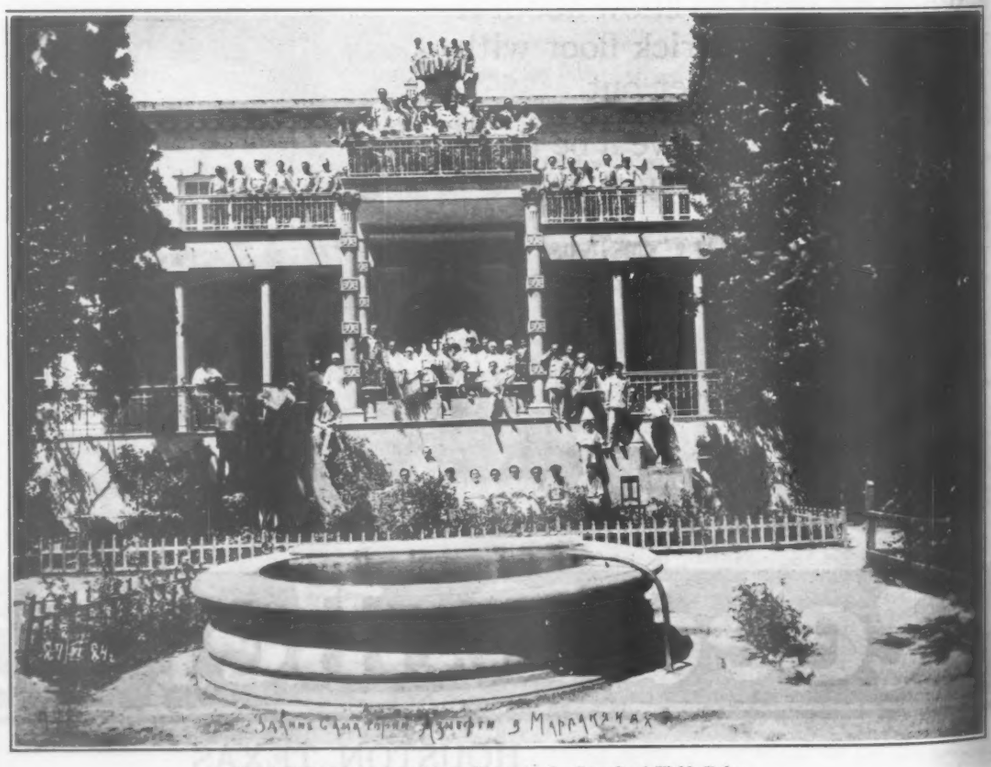
The Mutual Oil Co.'s No. 4-A Partridge, SW cor. Section 5-19-12, was rigging up tools.

Thornton and others were rigging up tools to deepen No. 13 Berry, CNL NE SE SW, Section 20-19-12.

FUEL OIL CONTRACTS

The United States Shipping Board has awarded 1925 fuel oil contracts to the General Petroleum Corp. for 150,000 bbls. for delivery at Buenos Aires at $2.65 a barrel, plus barging at current rates; and to the Mexican Petroleum Co., 198,000 bbls., delivery at Rio de Janeiro at Terminal price of $17.50 a metric ton and barge price of $18.50 a metric ton.

Oil workers' houses near Binigadi, Baku.



Natatorium for the Asneft's workmen in the Surachani Field, Baku.

Approved for Field and Refinery Service

Stanley

Solid Woven Cotton Belting

"Whoa! Whoopie; cut the rarin'. Hello, Jack; I want a new belt, *quick!*"
"'Fraid you're out o' luck, Mac."
"Then you better make one, darned fast."

"Here's one that's been in storage a couple of years—"
"Yes, I know. Stiff as a board; cracks to pieces; what else you got?"
"Here's an old, dirty cotton belt."
"What kind?"
"STANLEY."
"STANLEY! Boy, you just said somethin'. If I'd had that one first I wouldn't be shut down now."
"Looks pretty old and worn, though,Mac. She's done three or four jobs already."
"Old, my eye; why there ain't no wear out to that belt. I been usin' them for years and I know. Throw her in. Tell the purchasing end to charge up four or five hours of rest for my gang on that belt that busted on me. Get up, Cowboy. So long, Jack."

THE OIL MAN'S BELT

Here's the belt that does not break at the clamp. It is so flexible you can take a thick piece and wrap it around your wrist—that's the hinge weave. The cotton yarn in long fiber tightly twisted and specially treated. It turns off the oil and dirt. The belt has only very slight stretch—and that when new.

As for strength—one inch width in STANLEY triple stands a strain of 3,300 pounds or ten inches will hold the weight of 165 good men.

It stands storage, too—keeps for years without stiffening or rotting and is just as good and strong in every way as if just freshly woven.

If you are not using STANLEY, ask your purchasing department to buy some and keep records on it, as many operators have done.

There is no belt giving service in the oil fields today equal to STANLEY SOLID WOVEN COTTON BELTING.

Samples and prices on request. Quick deliveries from nearest address.

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STANLEY BELTING
MADE IN SCOTLAND

New Angle on Major Pool Production

November Output, Graded, Shows a Large Percentage of Low Gravity Crude. Gravity Changes Since January

By James McIntyre

The 30 major fields of the United States—fields averaging 15,000 bbls. a day production over a period of a month—produced a total of 1,267,735 bbls. per day during November. This is the smallest total production of the major pools registered during 1924. In January there were only 24 major pools in the country but their combined average daily production was 1,286,724 bbls. a day, an average of 51.65 bbls. per well. In November the number of wells in 30 major pools was 31,118, and they averaged 40.7 bbls. per well per day.

November saw the addition of the Wetumka or Papoose Field in Seminole and Okfuskee Counties, Oklahoma, to the major list and the dropping out of the Graham-Fox area, in Carter County, Oklahoma, and the West Columbia Pool, in Brazoria County, Texas, both of which averaged below 15,000 bbls. in November. West Columbia was in the preferred list in September and October only.

A new feature of the table of major pools is a column giving the approximate average gravity of the oil in each of the fields. In some fields the gravity of the crude is fairly uniform, but in others it varies from say 26 degrees to 42 degrees, as in the Bristow Field in Creek County, Oklahoma. In giving the average gravity in the field effort was made to arrive at a fair figure at which the bulk of the production would grade, and this figure in numerous cases may be subject to difference of opinion. It is given only after conferences with men closely familiar with conditions in the various fields under consideration. Smackover, for instance, has two grades of oil. About two-thirds of the crude produced in November was of 20 gravity and about one-third of 26 gravity, and an average of 22 degrees is given for the field.

Decline from January

In January one field was producing more than 200,000 bbls. a day and three other fields were producing over 100,000 bbls. a day. The four fields, Long Beach, Santa Fe Springs, Salt Creek and Smackover produced in January a total of 576,476 bbls. The same fields in November produced 341,214 bbls. a decline in 10 months of about 40 per cent. The four fields named produced as much in January as their own combined production in November together with that of Cromwell and Papoose in Oklahoma; Dominguez and Coyote in California and Luling, in Texas, none of which figured as major pools in January, to which might be added the November production of Huntington Beach and one of the smaller major pools. The 24 major pools in January, which produced in that month an average of 1,286,724 bbls. a day, were down to 1,099,156 bbls. in November, a falling off of nearly 15 per cent in 10 months. The November report shows three fields with an average daily production in excess of 100,000 bbls. and one of these, Smackover, has since fallen below the 100,000-bbl. mark.

42 Per Cent of Low Grade

Nearly 42 per cent of the crude produced in the major pools in November was below 26 degrees in gravity while in January 44 per cent of the total production of the major pools was of the same low grade. A great variation is shown in the class of crude produced in November and in January. In both months the 36 to 37.9 grade predominated among the crudes grading above 25.9, but in January 328,888 bbls. of 38-39.9 oil was produced daily while in November the total was 220,942 bbls. In November 114,332 bbls. per day of oil grading 40 degrees and over was produced while in January this grade showed a production of only 39.723 bbls. The 38-39.9 grade in January was produced to the extent of 168,892 bbls. a day, but in November it had fallen to 84,833 bbls. In January only 70,171 bbls. of 32-33.9 crude was produced daily but in November this had increased to 158,014 bbls. a day. Other pronounced changes may be seen by a study of the accompanying table which separates the production of November and January into grades for comparative purposes.

31 Major Pools in December

The year will close with 31 major pools in the country. None of those listed in November dropped out in December, while the Wortham Pool in Limestone and Freestone Counties, Texas stepped onto the pedestal with the other leaders, making the tenth pool to have been added to the list since January, namely, Dominguez and Coyote, California; Stroud, Graham-Fox, Cromwell and Papoose, Oklahoma; West Columbia, Luling, Richland and Wortham, Texas, of which Stroud, West Columbia and Graham-Fox dropped out in the course of the year. To the additional pools might be added the Tonkawa deep sand production which revived a declining field that made 39,723 bbls. a day in January and 35,211 bbls. a day in May, and increased the production to 104,367 bbls. in September and 96,207 bbls. in November. The oil averages 42 degrees in gravity.

THE MAJOR POOLS OF THE UNITED STATES

	Barrels						No. wells	Average Production per day per well	Approximate gravity of oil
	June	July	August	September	October	November	November		
California—									
Midway-Sunset	108,240	106,362	104,989	103,267	109,619	109,037	2,926	37.2	22.5
Long Beach	159,512	154,162	149,033	142,645	136,418	128,464	1,060	121.2	25.0
Santa Fe Springs	61,049	59,562	57,987	56,683	54,909	53,097	348	152.6	33.5
Huntington Beach	46,073	43,232	41,642	41,274	40,690	40,591	296	137.1	23.0
Torrance	57,229	57,308	56,165	54,315	49,447	45,586	482	94.6	22.0
Elk Hills	38,909	38,350	41,021	40,939	39,150	38,417	250	153.7	22.0
Coyote	18,830	19,557	20,275	19,952	20,179	20,744	231	88.6	22.0
Kern River	18,693	18,504	18,652	18,260	17,787	18,113	2,175	8.3	13.0
Coalinga	32,869	32,715	24,764	21,413	24,653	24,859	1,050	23.7	16.0
Montebello	16,717	16,778	16,908	16,786	16,930	16,906	156	108.4	24.0
Dominguez	.....	16,761	23,884	30,021	32,576	33,767	29	1,164.4	31.5
Wyoming—									
Salt Creek	91,009	90,176	87,467	80,350	68,279	57,038	1,331	42.9	37.0
Oklahoma—									
Burbank	91,819	84,246	75,415	74,317	73,360	71,205	1,610	44.2	37.5
Bristow	44,187	43,114	40,567	41,114	38,947	32,766	914	35.8	34.0
Tonkawa	36,674	37,443	70,753	104,367	101,419	96,207	711	135.3	42.0
Cushing	23,981	23,902	23,871	23,836	23,910	24,045	2,681	9.0	38.0
Hewitt	19,879	19,173	19,164	18,513	17,965	17,074	792	21.6	33.0
Healdton	16,575	16,466	16,075	16,177	16,164	16,301	1,916	8.5	30.0
Graham-Fox	19,866	16,712	15,614	15,127	15,034	.....	...	.....	....
Stroud	22,716	18,114	19,179	.....	.....	.....	...	.....	....
Cromwell	25,719	46,317	60,898	45,060	40,816	47,890	201	238.2	38.5
Papoose (Wetumka)	.....	.....	.....	.....	.....	23,490	48	487.1	38.5
Texas—									
Powell	93,491	85,764	79,330	78,615	75,558	69,242	744	93	37.0
Mexia	28,718	28,838	26,913	25,315	24,700	23,457	446	52.4	30.0
Burkburnett	19,634	18,594	18,862	17,658	17,307	16,598	3,336	5.0	38.5
Holliday	31,658	31,143	29,952	27,828	28,944	38,339	1,377	27.8	39.0
Richland	.....	.....	18,487	22,630	22,500	18,125	87	208.3	40.0
Electra	21,079	21,334	21,016	20,535	20,388	18,530	2,475	7.5	38.5
Hull	18,998	21,040	21,641	31,164	17,340	15,960	257	62	20.5
West Columbia	.....	.....	.....	15,631	16,390	.....	...	....	....
Luling	46,200	48,089	44,667	31,164	28,680	32,864	335	98.1	29
Arkansas—									
Smackover	142,242	131,644	124,076	118,367	112,921	102,615	2,064	49.7	22
Louisiana—									
Haynesville	18,363	18,616	18,519	17,744	16,412	16,428	690	23.8	34
Total	1,370,929	1,364,016	1,387,777	1,371,072	1,319,392	1,267,755	31,118	40.7	....

Production of Major Pools by Gravity

	Barrels		Per Cent	
	November	January	November	January
Degrees—	1924	1924	1924	1924
40 and over	114,332	39,723	9	3
38-39.9	168,892	84,833	13.3	6.6
36-37.9	220,942	328,888	17.4	25.6
34-36-9	49,194	64,487	3.9	5
32-33.9	70,171	158,014	5.5	12.3
30-32.9	50,068	15,956	4	1.2
28-29.9	32,864	None	2.6	None
26-27.9	33,000	25,000	2.6	2
Below 26	528,292	569,773	41.7	44.2
	1,267,755	1,286,674		

News from Fields of Canada

By Victor Lauriston

CHATHAM, Ont., Jan. 3.—A comparative statement of oil production in the Ontario fields for the months of July, August and September indicates a decided decline from the same months of 1923. In the three months of 1924 there was a decline of 7,390 bbls. forr the Ontario producing areas. The decline in the Petrolia-Enniskillen Field along for this period was 2,509 bbls., and for the Oil Springs Field it was 2,881 bbls. While there has been normally a small decline from year to year, the marked accentuation of the decline in production is thought to be due to the 50 per cent reduction in the Government bounty, which went into effect July 1, 1924.

In the Canadian West, interest at present centers in the Okotoks Field southwest of Calgary, where the Royalite Oil Co.'s No. gasser, Section 7-20-2w5, has developed a substantial gasoline production. In October this well as a result of deeper drilling entered a new producing sand at a lower level which which developed an open flow of approximately 20,000,000 feet a day of wet gas under a very high pressure. The well caught fire subsequently, and was extinguished only with very great difficulty. At present, the well is not yet fully under control, but a recovery of approximately 200 bbls. a day of high gravity casinghead gasoline is being made and the well is producing steadily at the rate of 17,000,000 feet a day of gas. No. 4 deep test was originally intended to be carried to a still lower horizon, but it is improbable that in the present state of the well the drilling at this location can be carried any deeper; so that a new test will likely be started in the spring. The discovery is, however, regarded as furnishing encouragement for further drilling, representing as it dooes the first practical return to Imperial Oil, Ltd., for a seven years' development campaign at large expenditure of time and material.

Less than 1 mile south of the Royalite's No. 4 the McLeod Oil Co.'s well on flection 1-20-3w5, is reported still shut down, with no definite capacity test yet made of the oil showing at the 2,400-foot horizon.

In the Irma-Wainwright Field, East-Central Alberta, work at practically all the wells is reported shut down owing to severe cold weather accompanied by a heavy snow fall which has blocked the roads. Western Consolidated Oil Co., Section 20-45-6w4, which has a standard rig, was at last reports still drilling. Wainwright Oil Producers Syndicate, Section 36-44-7w4, shut down until after the holidays. British Petroleum's No. 3, Section 29-45-6w4, which has been run-

(Continued on Page 68)

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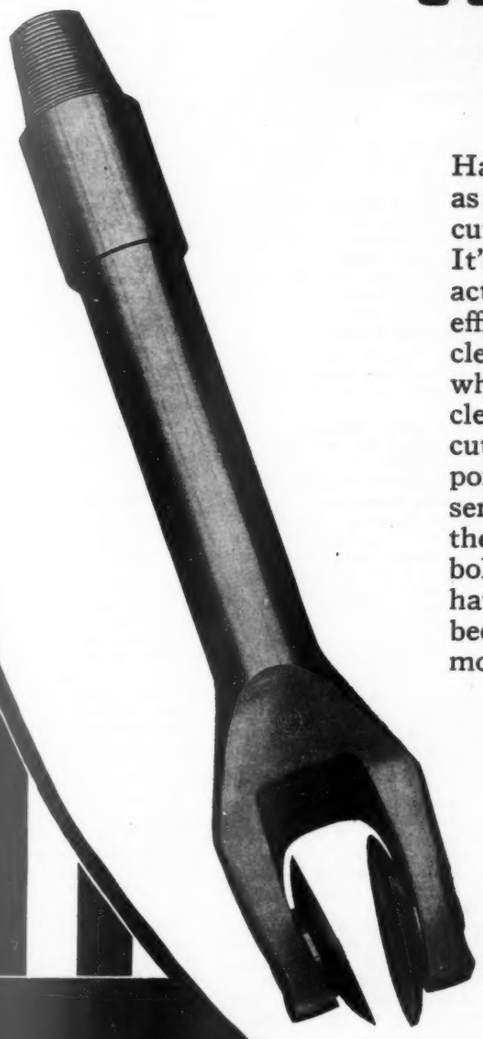

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North Louisiana-Arkansas

By M. L. Vaughn

But one completion in Union County, 40 bbls., and seven in Ouachita County. Cumberland Petroleum Co.'s 590-bbl. producer largest. Six completions in Cotton Valley with no new production. One deep test abandoned at 3,372 feet. Wildcat tests and deepening of old wells going forward in Union County.

SHREVEPORT, La., Jan. 5.—During the past week there was little activity in this territory as practically all drilling rigs were closed down for the holidays. Despite the lessened activity, however, during the past two weeks about 50 wells have been started and completions have added approximately 2,500 bbls. of oil and 200,000,000 feet of gas to the output of the field. A decrease in production in nearly every field was recorded last week with the exception of Smackover light which shows an increase of about 5,000 bbls., bringing the total increase in production to 4,004 bbls. over the previous figures. Production of the combined fields averaged 159,425 bbls. a day, distributed as follows:

North Louisiana	
Bellevue	4,040
Caddo light	9,100
Caddo heavy	2,325
Cotton Valley	5,745
De Soto and Red River	4,480
Elm Grove	655
Haynesville	16,855
Homer	7,050
	49,250
South Arkansas	
El Dorado	10,380
Nevada County	1,125
Smackover light	33,240
Smackover heavy	63,270
Stephens	2,160
	110,175
Total both fields	159,425
Increase	4,004

Takes Over Leases

The Crusader Pipe Line Co. has taken over the leases of the Oil Fields Gas Co. in the Cotton Valley district and has already made the location for another well. The leases consist of approximately 680 acres, in Sections 13, 20 and 24, Township 20, Range 15. The property was purchased by the Crusader for a consideration of $400,000 cash and will pay no more until the acreage produces 350,000 bbls. of oil. They then pay at the rate of 25 cents per barrel on all oil produced until they pay $600,000 more. In the event oil is found in the Woodbine sand they are to pay an additional $300,000 out of seven-sixteenths of all oil produced from this sand.

The Oil Fields Gas Co. drilled the discovery well in the Cotton Valley Field and at the present time, there are two wells with 6-inch casing set, and another drilled to 1,300 feet, all on the Hope Estate.

Considerable interest is being shown in the Waskom district of East Texas. Good fuel wells continue to come in and the deep gas has scarcely been touched. The fields present open flow capacity is approximately 1,000,000,000 feet per day. The Gulf Production Co. is well under way on the first of four deep tests they expect to make in this territory and it is reported William & Deas are arranging to sink two deep wells in the same vicinity.

Interest has been attracted to La Salle Parish with the spudding in of the Urania Petroleum Co.'s fifth well on its lease in Section 18-10-2e. This is the first deep test in that area for several years and its progress will be closely watched. In the four wells previously drilled interesting showings were had at various depths and as the coring showed a dip to the southeast this fifth well has been placed to top the rise if possible. In the same parish the Gulf Refining Co. is arranging to resume drilling in its No. 1 Urania in Section 20-10-2e, which is down 1,100 feet but was closed down on account of the dry season.

Union County, Arkansas, Completions

Due to the general shutdown throughout the territory for the holiday season, there was only one producing well completed in Union County, adding 40 bbls. to the output of the field. It was completed by the Arkansas Fuel Oil Co., No. 5 La Grone in Section 1-16-17, and is in the west end of the Louann district.

E. M. Jones drilled to 3,542 feet in his deep test on the Murphy lease in Section 26-16-16, and the well was abandoned at this depth. The test was 3 miles west of Norphlet.

Ouachita County

A little better record was made in the Ouachita County area of the Smackover Field, completions numbering 7, with 1 failure and 6 producers having an aggregate initial production of 1,052 bbls.

The Atlantic Oil Producing Co.'s Rowland C-1 in Section 20-15-16, is pumping 75 bbls. of fluid, of which 80 per cent is salt water, at 2,305 feet.

The Cumberland Petroleum completed its first well on the Reynolds lease in Section 23-15-17, flowing through 2-inch tubing at the rate of 590 bbls. a day, at 2,318 feet.

The Duho Oil Co.'s No. 4 McKenzie, Section 36-15-16, made a 137-bbl. pumper at 2,012 feet.

Galloway and others completed No. 2 Hughes, Section 28-15-16, pumping 100 bbls. at 2,275 feet and No. 4 W. A. Smith, Section 36-15-17, pumping 30 bbls. at 2,282 feet.

The Gulf Refining Co.'s No. 1 Reynolds, Section 23-15-17, is flowing 120 bbls. at 2,314 feet.

The Johnson Drilling Co. has abandoned No. 1 Ritchie, Section 21-15-16, at 2,375 feet.

Cotton Valley

No new production was added to the output of the Cotton Valley district during the week, although there were six wells completed in that field. Four were gas wells and two, failures.

The Fortuna Oil Co. completed No. 4 S. J. Merritt in Section 14-21-10, making 2,000,000 feet of gas with a spray of oil at 2,525 feet.

The Humble Oil & Refining Co.'s Bodcau B-7 in Section 28-21-10, made 15,000,000 feet of gas with a spray of oil at 2,580 feet.

S. S. Raymond and others got salt water in No. 1 Coyle, Section 21-21-10, and the test was abandoned at 3,372 feet. This was one of two deep tests in the Cotton Valley district which had been watched with interest.

The Texas Co. completed No. 1 F. M. Tinsley, Section 35-23-10, making 42,500,000 feet of dry gas at 2,657 feet.

The Tidal Oil Co. completed No. 1 Gleason in Section 28-21-10, making 15,000,000 feet of dry gas at 2,555 feet.

The Woodley Petroleum Co. has abandoned No. 1 A. J. Hodges, Section 18-21-9, at 2,543 feet.

Bossier Parish

The Standard Oil Co. of Louisiana tested dry at 1,927 feet in No. 4 McDade, Section 31-16-11, in the north end of the Elm Grove district, and the well has been abandoned.

Caddo Parish

In the Hosston district, the Lewis Oil Corp. completed No. 5 Caddo Mineral Land Co., Section 24-22-15, pumping 40 bbls. at 1,042 feet.

In the Pine Island district, the Tholl Oil Co. completed No. 12 Crye, Section 22-21-15, pumping 5 bbls. at 1,627 feet.

La Salle Parish

The Urania Petroleum Co. abandoned its fourth test on the Urania lease in Section 20-10-2e, at 1,573 feet.

Ouachita Parish

The Ouachita Natural Gas Co. completed No. 3 Trezevant, Section 4-20-4e, making 21,000,000 feet of dry gas at 2,155 feet.

Drew County, Arkansas

Rhodes and others got salt water in No. 1 Harris, Section 6-13-8, and the test has been abandoned at 2,305 feet.

Drilling Operations

Union County, Arkansas: Several interesting wells are being drilled in Union County at the present time, among them wildcat tests and a few old wells which are being deepened to the third sand. The Natural Gas & Petroleum Co. is rigging up to deepen No. 1 Lawton, in Section 10-16-15, completed on June 6 of last year as a 6,000-bbl. producer at 2,075 feet.

Doorin and associates have a rig up for No. 1 Bradley, Section 4-19-16. Four miles southwest of Norphlet the Liberty Oil Co. is waiting on 8¼-inch casing at 1,930 feet for its test on the Davis lease, Section 31-16-14. Matthews and associates are down 1,850 feet in No. 1 Teele, Section 11-19-12, 18 miles east of the South El Dorado Field.

P. F. O'Brien is drilling in gumbo at 2,205 feet in the second hole for No. 1 fee, Section 13-19-17, 7 miles west of the South El Dorado Field.

The Arkado Oil Co. set 8¼-inch casing at 2,330 feet in No. 5 Hatfield, Section 7-16-15. Broderick & Calvert milled through casing at 1,815 feet, in No. 2 Bradford, Section 8-16-15. W. A. Dellmeyer, trustee, has rig up for No. 1 Ezell, Section 13-17-15.

The Federal Petroleum Co. is drilling at 3,065 feet in No. 1 Childs, Section 8-16-16. The Gulf Refining Co. set 6-inch casing and drilled plug at 1,865 feet in No. 10 M. Alphin, Section 2-16-15. It is arranging to shoot casing in No. 18 L. Werner and test shallow sand at 2,643 feet, Section 5-16-16; down 1,935 feet in No. 24 L. Werner, Section 6-16-16 and with 10-inch casing set in No. 27 has drilled to 1,075 feet, same section.

Howell and others are waiting on standard rig to pump No. 1 Williams at 1,988 feet with 800 feet of oil in the hole and 12 feet of sand. Section 3-16-15. The Houston Oil Co. set 4½-inch casing at 2,220 feet in No. 3 Hinson, Section 25-16-15.

W. W. Jones and associates set 10-inch casing at 75 feet in No. 1 F. G. Murphy, Section 18-16-15. The Lion Oil & Refining Corp. is running core in No. 4 Allgulf at 2,397 feet, Section 17-16-15; and the same in No. 6 Graves at 2,290 feet, Section 3-16-15.

The Magnolia Petroleum Co. has derrick up for No. 4 Campter-Campbell, Section 13-16-17; set 6⅝-inch casing at 2,085 feet and bailing No. 3 Harris, Section 16-16-16; has derrick up for a fourth well on the Powell lease in Section 19-16-15, Nos. 1, 2, and 3 formerly drilled by Bond, trustee, is down 2,000 feet in No. 1 N. J. Scott, Section 12-16-17 and has derrick pattern on location for No. 1 J. G. Smith, Section 2-16-17.

The Natural Gas & Petroleum Co. is drilling at 2,705 feet in No. 3 Frazier, Section 1-18-16; moved the location of No. 5 Murphy to the center of the east line of the SE quarter of the SE quarter and has derrick built, Section 8-16-15.

The Ohio Oil Co. has rig up for No. 5 Pate, Section 10-16-15. The Pure Oil Co. is waiting on standard rig to pump No. 1 C. Hicks at 2,115 feet with 200 feet of oil in the hole and 16 feet of sand, Section 20-16-15. In the same section has derrick pattern on location for No. 2; drilling shale at 2,465 feet in No. 1 Lawton, Section 30-16-15.

Rutledge, trustee, is down 1,600 feet in No. 4 Hodges, Section 1-16-17. The Sims Oil Co. tested a show of oil at 2,630 feet in 7 feet of sand in No. 1 Laney heirs and bailing 17 feet of sand at 2,642 feet, Section 8-16-16.

The Standard Oil Co. is setting liner at 1,980 feet in No. 9 J. H. Alphin, top of sand 1,961 feet, 800 feet of oil and no water in hole, Section 3-16-15. The Sunny Jim Oil Co. is waiting on standard rig to pump No. 2 Flenniken at 2,060 feet, Section 9-16-15 and is down 2,125 feet in No. 1, same section.

Wabler and others are drilling lime at 2,130 feet in No. 1 Williams, Section 36-17-14. Weatherbee and associates are down 1,085 feet in No. 3 Rice, Section 6-16-16.

Nye Wilson is waiting on standard rig to pump No. 4 Hays at 1,995 feet with 700 feet of oil and 22 feet of sand, Section 4-16-15.

Ouachita County, Arkansas

Smackover territory shows a marked increase in drilling activity the past week with a number of interesting wells under way. In the deep sand area wells are being closely watched. Boger and associates set 6-inch casing at 1,920 feet in No. 2 Minor, Section 20-15-16. The British Allied Estate's No. 1 Lampkin fee is being drilled at 1,200 feet, Section 6-13-18, in wildcat territory, 10 miles northwest of Camden.

The Arkansas Drilling Co. is down 1,400 feet in No. 1 Reynolds, Section 24-15-17. Bray-Hawthorne set 6-inch casing at 2,075 feet in No. 1 Goodwin, Section 12-15-17 and Burton, trustee, set 10-inch casing and drilled to 1,350 feet in No. 11 Hughes, Section 21-15-16.

H. E. Clark is swabbing in 43 feet of sand at 2,405 feet in No. 2 Smith, Section 26-15-17, and set 6-inch casing at 2,290 feet in No. 2 Yarbrough, same section.

The Cumberland Petroleum Co. is bailing to test No. 2 Reynolds at 2,320 feet in 41 feet of broken sand, Section 23-15-17 and has derrick pattern on location for No. 3, same section.

Ellis & Dumas set 6-inch casing at 2,205 feet in No. 2 Forest City Box Co., Section 31-15-16. The Empire Gas & Fuel Co. is arranging to start two wells on the Bradley lease, Section 30-15-15. The Forest Oil Co. is drilling at 2,000 feet in No. 17 J. A. Cramer, Section 27-15-16 and is down 2,210 feet in No. 3 C. Minor, Section 20-15-16.

The Gulf Refining Co. is building a derrick for its second well on the Reynolds lease, Section 23-15-17; has drilled to 1,800 feet in No. A-7 Werner, Section 26-15-17 and is waiting on standard rig to pump No. 2 Henry Murphy at 1,995 feet with 400 feet of oil in the hole, Section 2-16-15.

Hazen and others are bailing casing at 2,230 feet in No. 1 Fincher, Section 29-15-16. Hunt and others set 6-inch casing at 2,245 feet in No. B-7 Anderson, Section 23-15-17; set 6-inch casing at 2,257 feet in No. B-5 Green, Section 23-15-17 and set 10-inch casing at 45 feet in No. 1 Halton, Section 23-15-17, with 10-inch set at 55 feet in No. 2, same section.

J. N. Jones and others are swabbing 6-inch at 1,950 feet in No. 2 Ferris, Section 34-15-15. Kourey and others are rigging up No. 1 Churchyard, Section 28-15-15. The Magnolia Petroleum Co. set 10-inch casing at 135 feet in No. 4

(Continued on Page 78)

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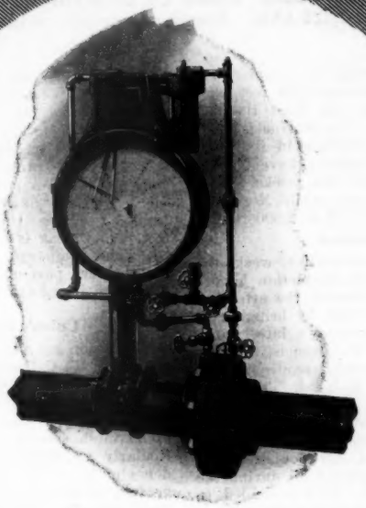

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METRIC METAL WORKS

California Field Operations

By L. P. Stockman

General Petroleum Co.'s No. 1 Amestoy defines the southwestern limits of Rosecrans Field. Associated Oil Co.'s No. 1-B De Francis, Dominguez, "jinx" well, proves fourth big producer with 4,466 bbls. Union Oil Co.'s No. 7 Callender, most westerly producer, makes 3,326 bbls. Standard completes four.

LOS ANGELES, Cal., Jan. 3.—The General Petroleum has apparently defined the southwestern limits of the Rosecrans Field with a 6,609-foot hole in No. 1 Amestoy, while the Union has established the outer limits a little southeast of this well with a 5,766-foot dry hole in No. 1 Gordon. The Standard seems to have marked the northeastern limits with No. 1 Cowan, still dry at 5,594 feet. The southern limits are very well established but the area around E. J. Miley's No. 1 Athens and to the northwest has not yet been defined. Miley's experimental work with No. 1 Athens is proving interesting. It went on production a short time ago at 4,947 feet but, following the precedent established by other wells in the district, dwindled down to a small producer. Miley has undertaken to deepen it and determine the thickness of the sand. The oil sand found at 4,913 feet pinched out at 4,950 feet but was again picked up at 5,088 feet. Miley is now coring solid to determine whether this second sand will be productive. A very good sand has been found between 5,088 feet and 5,113 feet, but a core just taken at 5,116 feet showed the formation to be a brown shale. Although he is concentrating his efforts on No. 1 Athens, Miley is not overlooking the possibilities of Nos. 3, 4, 5 and 6. No. 3 is drilling at 3,700 feet; No. 4 at 3,108 feet; No. 5 at 980 feet and No. 6 at 875 feet.

The Sentinel Oil Co.'s No. 1 Athens, northwest of E. J. Miley's No. 1 Athens, experienced a gas blowout early in the week at 5,256 feet but sanded up after a few hours and is cleaning out. The Sentinel has two other holes in this area, No. 2 at 3,568 feet and No. 3 at 3,460 feet. The Shell and Pan-American are drilling a little farther north of the Sentinel's property, the former's No. 1 Leonis going ahead at 4,681 feet and the latter's No. 1 Anderson at 4,396 feet. The Petroleum Midway, running four strings of tools, had its first showing in No. 1 Colby at 4,340 feet and this should be the company's first producer. No. 1 Baskin at 1,747 feet; No. 1 Folsom at 3,208 feet and No. 1 McCormick at 2,076 feet are not yet deep enough to pick up the pay. The Associated has plugged back both No. 1 Brockley and No. 1 Haviland, the former from 5,003 feet to 4,975 feet and the latter from 4,691 feet to 4,660 feet. In addition to these two wells, the company has three other drillers, No. 2 Higgins at 4,340 feet; No. 1 Hoge at 4,395 feet and No. 2 Wanka at 2,835 feet.

Barnsdall Wells

The Barnsdall has returned No. 2 O'Dea to production and it started off doing 1,232 bbls. of unusually clean 42.3 gravity oil. It is flowing through a ¾-inch bean under a pressure of 630 pounds. No. 1 O'Dea, on the other hand, is cutting about 15 per cent water. No. 3 is drilling ahead at 3,185 feet and looks good for production early. On the Rosecrans property, the company is redrilling No. 3 at 3,265 feet and drilling ahead in No. 4 at 2,480 feet. George F. Getty is making hole in No. 1 Athens at 3,220 feet and in No. 2 at 2,660 feet. A rig has been erected for No. 3, but actual drilling has not been started. The Hercules Gasoline Co. spudded in its first hole and is just getting under way at 285 feet. Julian has not succeeded in cleaning out No. 1 Athens, drilled to 4,921 feet, and it is understood he will shoot the fish within a day or so. The Marine is making unusually good footage in its three holes and will undoubtedly have No. 31 on production within two weeks. This hole is down 4,955 feet, while No. 32 is at 4,323 feet and No. 33 at 2,200 feet.

Dominguez

For the third consecutive week the Associated carried off completion honors at Dominguez and directed the attention of operators to this field by bringing in a big well. The company's latest completion was No. 1-B De Francis, the jinx well on this lease, which required three spuds before being finished. The first hole was ruined by a gas blowout and the second lost because of a crooked hole. No. 1-B, flowing through a 1½-inch bean under a pressure of 380 pounds, made 4,466 bbls. of 30.1 gravity oil during the first full day's test. It was drilled to 4,220 feet and finished with a 6¼-inch oil string carrying 410 feet of 120 mesh screen. This is the Associated's fourth big producer on the 50-acre De Francis property, their combined output being 16,000 bbls. Since the present daily production of the district is 60,000 bbls., the Associated is pulling out over 26 per cent. No. 3 De Francis is the biggest well in the field at present, yielding a little better than 5,500 bbls. of high grade oil each day. No. 5 De Francis at 3,996 feet and No. 6 at 3,851 feet should further augment the company's production within a short time.

The Shell has not yet succeeded in putting any more wells on production on the Manuel lease, offsetting the Associated's De Francis lease to the east, but is working frantically to finish Nos. 1, 2, 4, and 5 in order to participate in this flush production. No. 1 Manuel has been plugged back from 4,479 feet to 4,328 feet because of water trouble. No. 2 at 3,975 feet and No. 4 at 3,928 feet are standing cemented, the former for the fourth time. The cement has been drilled out of No. 5 and a casing test will be made within a few days of this 4,005-foot hole. On the Reyes property, No. 19 looks like the company's next producer, showing plenty of life at 4,160 feet. No. 20 is standing recemented at 4,121 feet and this well, together with No. 13, now making hole at 4,150 feet, should be on production within three weeks. Good progress is being made, also, on No. 14-A now at 3,565 feet; No. 21 at 3,901 feet and No. 22 at 2,690 feet. No. 23 is just getting under way at 550 feet, while a rig is being erected for No. 24. The company's No. 1 Hellman, in the northern part of the district, is drilling ahead in a hard sandy shale at 5,865 feet.

Union's Good Well

The Union got a nice Christmas present from No. 7 Callender, which came in doing 3,326 bbls. of clean 30.1 gravity oil. It was drilled to 4,664 feet and finished with a 4¼-inch liner carrying 605 feet of 60 mesh screen. This well was particularly gratifying to the Union's field department as it was considered more or less of a feeler, since it is now the most westerly producer. The well's big production has resulted in some discussion as to whether it occupies a position on the western flank of the structure similar to the Associated's De Francis wells on the east flank. The latter lease, although not very far from the edge of the structure, is the most prolific in the field and it may be possible there is an area of corresponding productivity on the other flank under the Union's Callender property.

In the northeastern part of the Dominguez Field, the Henderson Petroleum has carried No. 1 Del Amo down to 3,805 feet and, judging by the rapid footage made, should be in a position to give the well a try within 30 days. The United Oil Co. has plugged back No. 2 Dominguez from 4,447 feet to 4,360 feet because of bottom water. It will be noted that a similar water problem has held up No. 1 Manuel of the Shell and No. 2 Dominguez of the United, both being drilled into bottom water and later plugged back approximately 100 feet. Nos. 3 and 4 Dominguez of the United are drilling ahead, the former at 2,100 feet and the latter at 3,800 feet. The Marland has plugged back No. 4 Dominguez from 4,370 feet to 4,290 feet and should be put in a position to make a test during the coming week. The company's No. 5 is drilling ahead at 3,998 feet, while No. 6 is making hole at 3,654 feet. No. 1 Humphries of the Birch Oil Co. is still dry at 5,851 feet but it is believed the company will continue drilling unless mechanical trouble develops.

Torrance

The Standard celebrated the holiday season by bringing in four new wells at Torrance with an aggregate initial output of 880 bbls. The best was No. 20 Joughin good for 470 bbls. of 20.6 gravity oil which cut 5 per cent. It came in from 3,840 feet after being finished with a 6¼-inch liner carrying 280 feet of shop perforated. Two pumpers were finished on the Marble fee property, No. 30, good for 110 bbls. of 22.4 gravity oil which cut 5 per cent, and No. 31, which made 155 bbls. of 21.3 gravity oil, which cut 6 per cent. The former was drilled to 3,775 feet and finished with a 6¼-inch liner carrying 520 feet of shop perforated, while the latter, drilled to 3,760 feet, required a 6¼-inch liner carrying 510 feet of shop perforated. No. 4 Kettler, put on the beam at 3,815 feet, pumped 145 bbls. of fluid on the initial test, but 30 per cent of the output was drilling mud and water.

The Petroleum Securities finished two wells but only one was actually put on a production test. No. 32, on Kleinmeyer Lease A, was put on the pump at 3,831 feet and an 82-bbl. well was secured, the oil testing 16.2 degrees and showing a rather large cut. No. 13, also on Kleinmeyer Lease A, was finished at 3,812 feet and will, in all probability, be given a test during the coming week. None of the deep tests being drilled developed any favorable indications. The Lora J. Oil Co.'s No. 1 Lomita is still held up with bottom water and further work will be required before any kind of a production test can be made. The hole was carried to 4,780 feet and later plugged back to 4,700 feet. This 80-foot plug in the bottom, however, failed to exclude the water and another will be set higher up. No. 1 Francis of the Chanslor Canfield Midway Oil Co. is still in a bad shape as the result of the loss of 6,000 feet of drill pipe. About 3,000 feet of the fish has been recovered but the balance is still stuck on bottom at 6,536 feet. The Shell's No. 2 Kettler, in the east end of the Torrance Field, is still dry at 5,376 feet, the formation being a hard sand. No. 20 Poggi of the General Petroleum, put on a test last week, is being bothered with sand and it looks as though a cleanout job will be in order.

Long Beach

The only well actually put on production at Long Beach during the past seven days was No. 20 Alamitos of the Shell, a 270-bbl. pumper of 18.1 gravity oil. This hole, originally drilled to 4,779 feet, was plugged back to 4,650 feet and finished with a 4¼-inch oil string carrying 750 feet of 60-mesh screen. The plug is apparently leaking as the production is cutting 20 per cent. The Shell's next producer on this lease will probably be No. 23, now drilling ahead at 4,302 feet. No. 17, a cleanout job at 4,601 feet, also looks good for an early completion. No. 1 Dolley is showing oil and gas at 4,397 feet and the Shell's Field men hope to finish at least a 300-bbl. well as soon as a little mechanical trouble is overcome.

The A. T. Jergins Syndicate landed a string of casing in No. 15 Municipal and a test will be made for production in the upper zone at 3,210 feet. The Dabney Oil Syndicate finished drilling its well No. 18 at 4,800 feet and landed a string of 6½-inch on bottom. The cement has not yet been drilled out, but judging from indication a good well should be brought in soon. No. 2 McKeon of the Pan-American came in flowing 400 bbls. a day from 4,993 feet but, since nearly half of the output is water, it does not look as though a successful water shutoff has been effected. The well has been flowing into the sump for several days but has not shown any indications of cleaning up. The San Martinez Oil Co. put No. 4 Booth on a pumping test at 4,612

(Continued on Page 98)

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

Agwipond, December 28, New York, crude	90,410
Robt. E. Hopkins, December 28, New York, crude	73,429
Coastwise	
W. S. Porter, December 21, Linnton, fuel	45,352
Frank G. Drum, December 22, Avon, crude	70,333
Montebello, December 22, Martinez, crude	75,302
W. S. Miller, December 23, Richmond, crude	74,195
U. S. Tanker Neches, December 24, San Diego, fuel	51,320
Deroche, December 25, Vancouver, fuel	85,960
J. A. Moffett, December 25, Richmond, crude	65,797
Mericos H. Whittier, December 25, Avon, crude	70,570
Richmond, December 26, Richmond, crude	65,160
Wm. F. Herrin, December 26, Avon, crude	45,388
Cathwood, December 28, Martinez, crude	74,643
Los Alamos, December 28, Portland, refined	35,862
Tejon, December 28, Portland, fuel	71,614
Utacarbon, December 28, Martinez, crude	76,110
Exports	
Foldenfjord (Nor.), Dec. 25, England, refined	75,822
Calgarolite (Br.), December 27, Chile, fuel	75,712
From Ventura	
Wm. F. Herrin, December 21, Avon, crude	43,178
From Port San Luis	
Shreveport, December 24, Wellington, fuel	71,497
From San Francisco	
Sun, December 22, Jacksonville, fuel	54,095
Tecumseh (Br.), December 22, Shanghai, fuel	72,350
Yorba Linda, December 23, Seattle, fuel	73,406
Frank H. Buck, December 23, Portland, fuel	61,739
El Segundo, December 26, Aberdeen, refined	30,981
W. S. Miller, December 26, Port Alice, fuel	72,808
Kewanee, December 27, Seattle, refined	29,611
Frank G. Drum, December 28, Honolulu, fuel	74,092

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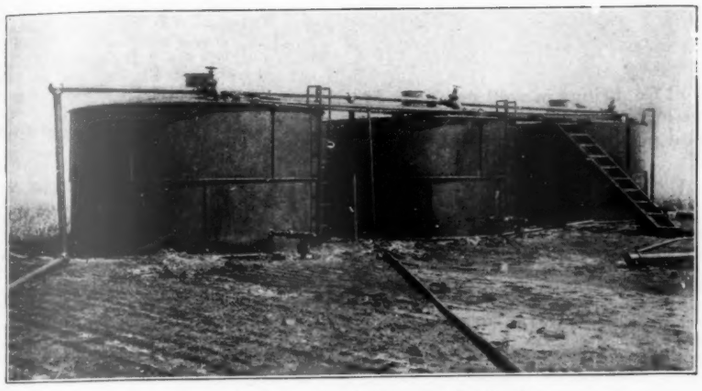

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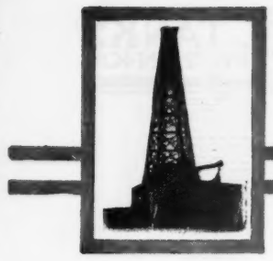

Kansas Oil Field News

By C. D. Lockwood

Cowley County continues to hold interest. Carter Oil Co. brings in well good for 1,000 bbls. an offset to T. B. Slick's well which is making good production from deeper sand. J. A. Hull Co. extends deep sand production in Winfield Pool while Teeter Pool has new producer.

Cowley County continues to hold interest in regard to Kansas oil production. The past week saw the completion of four wells of the first magnitude within the boundaries of that county which seems to have so many different producing horizons. The Carter Oil Co. brought in a 1,000-bbl. well after T. B. Slick, in his north offset to the same well, had passed the sand by carrying a hole full of water, only to bring in a big producer from a sand at 1,800 feet lower. The Waite Phillips Co. brought in two new producers in the Rainbow Bend Field, each of them good for nearly 1,000 bbls., and the J. A. Hull Co. brought in its No. 7 Detmer, extending production of the deep sand in the Winfield Pool a third of a mile westward. Greenwood County was not to be left out of the limelight, however, for Bittler & McGinnis brought in a new well in the Teeter Pool, when their No. 2 Teeter, NW cor. SE NW, Section 35-23-9, flowed 1,200 bbls. the first 24 hours after a 110-quart shot in sand at 2,295-2,360 feet.

The Carter well is No. 1 on the Waite farm, NW cor. SE, Section 19-32-3. The sand was found at 2,602-14 feet, and three days after drilling in was flowing 950 bbls. T. B. Slick's No. 1 Carson, a wildcat, SW cor. NE, Section 19-32-3, was carrying water when it passed the 2,600-foot sand, and, though it got a good show, was continued down to 3,424 feet, where it got production. After having been producing for two months, it is still making 425 bbls. daily. Slick is now starting No. 1-B Carson, 100 feet south of No. 1 Carson to offset the Carter well, and two other wells for production from the deeper sand, No. 1 Conrad, SE cor. NW, Section 19-32-3, and No. 1 Waite, NE cor. SW, Section 19-23-3.

The Waite Phillips Co.'s No. 1 Thurlow, SE cor. SW, Section 17-33-3, in the Rainbow Bend Pool, made 600 bbls. the first 12 hours from sand at 3,203-35 feet; No. 2 Bachus, NE cor. SW NW, Section 20-33-3, found the sand at 3,239-73 feet, and was good for 975 bbls. the first 24 hours.

The J. A. Hull Co. extended production of the 3,000-foot sand in the Winfield Pool a third of a mile westward Saturday when No. 7 Detmer, NE cor. NW SW, Section 24-32-4, drilled in and made 1,032 bbls. the first 22 hours. The sand was found at 2,973-3,034 feet. Several other wells in the same pool are expected to reach the deep sand within a few days.

Other Cowley County Operations

The Alcorn Oil & Gas Co.'s No. 1 Dunbar, NE cor. SW, Section 29-30-5, was dry and abandoned at 3,380 feet. Roth and the Mission Oil Co. had a rig up for No. 1 Coffey, NW cor. SE NE, Section 30-31-5. C. E. Roth's No. 1 Hannah, CNL NW NE, Section 4-30-8, was shut down at 2,000 feet. Paul Trees had a rig up for No. 2 Mahannah, 1,200 feet east of No. 1, in Lot 20, Section 3-30-8.

The Marland Oil Co.'s No. 1 Woods, SE cor. NE NE, Section 9-33-3, in the Graham Pool, was pumping 125 bbls. from sand at 2,558-64 feet. No. 3 Woods, SE cor. NE, Section 9-33-3, was swabbing 100 bbls. from sand at 2,565-72 feet. The same owner's No. 2 Wright, C SW NW NW, Section 10-33-3, was swabbing 113 bbls. from sand at 2,560-65 feet. The Roxana Petroleum Corp.'s No. 1 Spruens, C NW NW SW, Section 10-33-3, was making 3,500,000 feet of gas from sand at 3,160-88 feet, and drilling in lime at 3,193 feet.

Forrester and others have a rig up for No. 1 Radcliff, NE cor. NW, Section 4-33-7. E. C. Briggs and others have a rig on the ground for No. 1 Riding, SW cor. NW, Section 7-33-7. The Waite Phillips Co.'s No. 1-A True, C NE NE NW, Section 29-33-3, in the Rainbow Bend Pool, was spudding in.

The Lewis Oil Co.'s No. 4 Elliott, SE cor. NW SE, Section 31-30-6, in the Eastman Pool, was drilling at 600 feet. C. W. Titus' No. 4 Elliott, SW cor. NE SE, Section 31-30-6, was drilling at 450 feet. Martin & Wilson's No. 4 Eastman, SW cor. NW SW, Section 5-31-6, was drilling at 840 feet. The Empire Gas & Fuel Co.'s No. 4 Eastman, SE cor. NE SE, Section 6-31-6, was spudding in.

Greenwood County

The Phillips Petroleum Co.'s No. 2 Teeter, C NE SW NW, Section 15-23-9, in the Titus Pool, Greenwood County, was making 150 bbls. after a 110-quart shot at 2,278-2,368 feet.

The Lewis Oil Co.'s No. 2 Coulter, NW cor. SE, Section 9-25-9, was spudding in.

Allen and others' No. 1 Kipfer, SE cor. SW NE, Section 13-22-10, was swabbing 175 bbls. from sand at 2,094-2,149 feet after a 110-quart shot. The Syndicate Oil Co.'s No. 1 Kipfer, SW cor. SE NE, Section 13-22-10, had 1,200 feet of oil in the hole from sand at 2,100-2,139 feet, total depth 2,140 feet.

The Mission Oil Co. and others' No. 42 Thrall, C SW, Section 28-23-10, was making 40 bbls. from sand at 2,295-2,335 feet. The York State Oil Co.'s No. 10 DeMalorie, C NW NE SW, Section 32-22-11, was pumping 30 bbls. from sand at 1,931-2,007 feet. The same company's No. 11 DeMalorie, C NE SW SE, Section 32-22-11, was ripped up and shut down. The Connell Petroleum Co. and others' No. 1 DeMalorie, NW cor. SW NW, Section 7-22-11, had a rig up. The Lewis Oil Co.'s No. 2 Coulter, NW cor. SE, Section 9-25-9, was spudding in. The Arkansas Fuel Co. had a rig up for No. 2 Sounder, SW cor. NW, Section 20-23-13. G. C. Moore and others were spudding in No. 1, NE cor. NE NW, Section 21-24-13. The York State Oil Co. had a rig on the ground for No. 12 DeMalorie, C SW SE NW, Section 32-22-11.

Chattanooga County

Page Brothers' No. 1 Green, NE cor. NW SE, Section 18-32-10, in Chautauqua County, was completed for 50 bbls. in sand at 2,344-46 feet. The same owners' No. 1 Malone, SE cor. SW NE, Section 18-32-10, made 700 bbls. initially from sand at 2,344-49 feet, and has declined to 60 bbls.

The Texas Co.'s No. 1 Wiggins, SE cor. SW SE, Section 33-32-10, was shot with 120 quarts in sand at 1,565-90 feet, and 120 quarts in sand at 1,882-86 feet; it was making 5 bbls. from each sand. Gledden and others' No. 1 Elroyd, SE cor. NE SE, Section 24-33-10, was dry and abandoned at 2,178 feet. The Noble Oil Co. has abandoned the location No. 1 Hallroyd, CWL SE NE, Section 31-33-10. Page Brothers' No. 1 Moffit, SW cor. SE SE, Section 24-34-10, was shut down at 550 feet. The Noble Oil Co.'s No. 1 Good, CWL SE NE, Section 31-34-10, was shut in as a gas well, making 1,000,000 feet of gas at 1,089-95 feet. The Ajax Drilling Co.'s No. 1 Shaver, SE cor. NE, Section 2-33-8, was drilling at 450 feet. Brock and others had a rig up for No. 1 Kinneman, SE cor. Section 16-34-9.

The Ohio Fuel Co.'s No. 1 Smith, C NW SW, Section 22-29-9, in Elk County, was shut in with 7,000,000 feet of gas in sand at 1,501-46 feet. Lemon and others' No. 1 Wheeler, C SW NE, Section 28-29-9, was dry and abandoned at 1,508 feet. The Arkansas Fuel Co. and others' No. 1 Perkins, C SW SE, Section 28-29-9, was completed for 5,000,000 feet of gas in sand at 1,731-50 feet. Dietrich and others' No. 3 Smith, SW cor. SE NW, Section 34-29-9, found sand at 2,303-30 feet, and was good for 15 bbls. after a 40-quart shot.

The Pennok Oil Co.'s No. 2 Beatty, SW cor. SW NE, Section 30-30-11, was dry and abandoned at 1,928 feet. Kurtz and others' No. 1 Rader, NE cor. SE, Section 5-30-12, was dry and abandoned at 1,830 feet. Ross & Wahn's No. 1 Dimmick, NW cor. Section 26-26-9, was dry at 2,343 feet. The Imperial Drilling Co.'s No. 1 Boughman, NW cor. SE, Section 4-29-10, was dry at 2,540 feet. The Clark Oil Co.'s No. 1 Lawyer, NE cor. SE, Section 35-30-9, got sand at 2,328-48 feet, and was good for 15 bbls. after a 60-quart shot.

The Roth-Bert Oil Co. had a rig up for No. 8 Porter, NE cor. NW SW, Section 12-29-8. The Empire Gas & Fuel Co.'s No. 2 Hannah, NW cor. NE NW NW, Section 13-29-8, was shut down at 1,225 feet. The Ohio Fuel Oil Co. was spudding in No. 1 Ford, C SW NW, Section 22-29-9. Lemon and others were drilling at 910 feet in No. 2 Wheeler, C NW SE, Section 28-29-9. The Watchorn Oil & Gas Co.'s No. 3 Denton, CWL NE NW, Section 3-30-9, was drilling at 1,200 feet. C. E. Roth has abandoned the location No. 4 Denton, CNL NW NE, Section 4-30-9. Baxter & Mitchell's No. 1 McIntire, C SE NE, Section 5-30-9, was drilling at 1,200 feet.

Jasper & Beshka are building a rig for No. 1 Carry, C SW, Section 28-28-1w, in Sedgwick County. Boyle & Tack have a rig up for No. 1 Metcalf, NE cor. SW NE, Section 6-25-1.

ONLY THREE BIG INDUSTRIES CARRY LARGER RESERVES THAN PETROLEUM

Only three industries back up the demands of consumers with greater stocks—based on days' supply—than the oil industry, according to data collected by the statistical department of the Western Petroleum Refiners' Association. These three basic industries are iron ore, with 312 days' supply; lumber, divided between California white pine, with 281 days' supply, and Western Pine Lumber, 245 days; and sole and belting leather, 197 days' supply. Cotton and crude petroleum follow, each having 197 days' supply.

It will be noted that the three commodities the days' supply of which exceeds that of crude petroleum have practically no deterioration through storage. Lumber, in fact, must be seasoned after coming from the mill before it is a marketable product. The same situation in regard to deterioration applies to cotton and all other products of which there is more than a 100 days' supply on hand at the present time. As is well known in the oil business crude petroleum in above-ground storage undergoes a substantial loss through evaporation. Another contrast between crude petroleum and the products just mentioned lies in the fact that relatively little outside expenditure is necessary for storage. Steel or concrete tanks are necessary for the permanent storage of crude petroleum and represent from 25 to 100 per cent to the total cost, the exact amount depending on the value of the crude.

In addition to the large storage of raw material the oil industry also carries a relatively large supply of finished product for the protection of the consumers. As shown in the accompanying table, this amounts to 47 days in the case of kerosene, 45 days for fuel and gas oil, 80 days for lubricating oils and 48 days for gasoline.

The following table shows the stock situation for 45 products:

	Stocks on Hand Quantity		Date	Daily average used as basis for number of day's supply	Day's supply
Floor and wall tile	8,393,355	sq. ft.	Aug. 31	Shipments	65
Paving brick	86,875,000	brick	Sept. 30	Shipments	135
Work clothing	2,762,804	garments	Sept. 30	Sales	53
Cotton	2,589,493	Bales	Sept. 30	Consumption	179
White cotton goods	9,300	cases	Sept. 30	Shipments	13
Dyed cotton goods	6,623	cases	Sept. 30	Shipments	36
Printed cotton goods	1,987	cases	Sept. 30	Shipments	43
Raw silk	42,260	bales	Sept. 30	Deliveries	44
Merchant pig iron	1,191,952	long tons	Aug. 31	Shipments	100
Sheet steel	81,576	short tons	Sept. 30	Shipments	12
Iron ore	38,998,000	long tons	Sept. 30	Consumption	312
Tin	2,419	long tons	Oct. 31	Deliveries	14
Zinc	91,440,000	pounds	Sept. 30	Output	31
Anthracite coal	4,643,520	short tons	Sept. 30	Output	19
Pneumatic auto tires	4,524,405	tires	Sept. 30	Shipments	46
Solid auto tires	141,735	tires	Sept. 30	Shipments	97
Inner tubes	7,352,200	tubes	Oct. 31	Shipments	53
Sole and belting leather	138,417,000	pounds	Spet. 30	Output	197
Upper leather	334,819,000	sq. ft.	Sept. 30	Output	159
Newsprint paper	28,463	short tons	Sept. 30	Shipments	7
Southern pine lumber	1,115,375,000	board ft.	Sept. 30	Shipments	74
Western pipe lumber	1,078,027,000	board ft.	Sept. 30	Shipments	245
California white pine	659,335,000	board ft.	Sept. 30	Shipments	281
Walnut lumber	13,605,000	board ft.	Sept. 30	Shipments	140
Maple flooring	32,440,000	board ft.	Sept. 30	Shipments	95
Oak flooring	42,564,000	board ft.	Sept. 30	Shipments	98
Turpentine	52,856	barrels	Sept. 30	Receipts	63
Resin	273,721	barrels	Sept. 30	Receipts	95
Enameled baths	68,373	baths	Sept. 30	Shipments	31
Enameled lavatories	147,318	lavatories	Sept. 30	Shipments	39
Enameled sinks	197,932	sinks	Sept. 30	Shipments	58
Clay fire brick	226,136,000	brick	Sept. 30	Shipments	125
Silica brick	37,370,000	brick	Sept. 30	Shipments	75
Face brick	53,316,000	brick	Sept. 30	Shipments	71
Portland cement	8,358,000	barrels	Sept. 30	Shipments	30
Black blasting powder	10,563,000	pounds	Aug. 31	Shipments	30
High explosives	5,538,000	pounds	Sept. 30	Shipments	7
Acetate of lime	19,335,000	pounds	Aug. 31	Shipments	65
Crude methanol	1,768,710	gallons	Aug. 31	Shipments	98
Wheat flour	8,675,000	barrels	Sept. 30	Consumption	98
Condensed milk	202,133,000	pounds	Sept. 30	Output	36
Crude petroleum	362,374,000	barrels	Oct. 31	Deliveries	179
Kerosene	308,124,602	gallons	Oct. 31	Shipments	47
Gas and fuel oil	1,611,586,894	gallons	Oct. 31	Shipments	45
Lubricating oil	247,998,498	gallons	Oct. 31	Shipments	80
Gasoline	1,152,374,237	gallons	Oct. 31	Shipments	48

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Rocky Mountain Area

By F. B. Taylor

Recent developments in Fort Collins Field, Colorado, upset calculations upon directon of structure. Pueblo development disappointing. Wildcat campaign over State promised in present year. Routt County well producing from shale. Midwest Co. has three completions in Salt Creek, Wyoming.

CASPER, Wyo., Jan. 3.—Recent developments in the Fort Collins Field in Colorado have placed a new feature before the oil men there in the development of that field. The old Roxana geological survey of the Fort Collins structure shows an elongated oval anticline, running about due north and south, in Township 8, Ranges 68 and 69, the axis of which pass through Sections 7, 18, 19 and 30-8-68 and Sections 1 and 6 of 7-68.

This would tend to show good possibilities of production in the south part of this structure near Fort Collins and land values there have advanced strongly since the Whittaker well came in. Now, however, later examinations of this part of the field seem to show that the old Roxana survey was in error and that the axis of the Fort Collins structure swings east from a north and south line as it approaches the southern part of the structure and at the same time there is a broadening out of the contours on the east side with a corresponding narrowing on the west slope. This phase was first noted in the well logs and it caused considerable trouble as the well logs of the different wells in that part of the field could not be correlated with the structure as it was supposed to exist according to the Roxana survey.

Well Records as Proof

Further examinations of the surface showed that the structure bore eastward as outlined and going on this new phase, the well records were found to correlate and prove the new survey. At the same time, through the narrowing of the contours on the west side of the structure, much of the land classified as valuable according to the Roxana survey was rendered valueless. For instance, the Victory well on Section 6-7-68, which was supposed to be located on the axis of the structure is, according to the new survey, outside the 3,200-foot contour and its log correlates with the other wells in this respect. Also the Chandler No. 1 of Ache & Brendel, which for a time was considered too far on the east side of the structure, is found to be located practically on the axis and between the 3,800 and the 3,900-foot contours and the Chandler well also proves its position by the well log. The Whittaker well of the Union Oil Co. is just over the 4,000-foot contour, or about 250 feet higher on the structure than the Ache & Brendel well. As the structure is considered to have over 800 feet of closure, this would make the Ache & Brendel well inside the production.

Geologist's Report

S. H. Casteel was one of the first geologists to make an extended survey of this new feature of the Fort Collins Field and his report follows:

"The chief problem involved in the interpretation of developments in this field to date is the correlation of certain sands penetrated in wells being drilled by Ache & Brendel, Farley and others, Atlantic Petroleum Co. and Victory Oil Co., with the sands penetrated in the Whittaker well of the Union Oil Co. of California. The correlation of the sands in the latter well has a more or less general acceptance. The principal sandstone members penetrated in the Whittaker well, according to the above correlation, were the Rocky Ridge sandstone at a depth of 50 to 270 feet and the Hygiene sandstone at a depth of 1,115 to 1,190 feet.

"A specific instance of this problem was the case of the well being drilled in Section 33-8-68 by Ache & Brendel and known as Chandler No. 1. A thick sand was encountered at a depth of 1,246 feet. The question arose as to whether this was the Rocky Ridge or the Hygiene sandstone. A microscopic analysis of the samples of the Rocky Ridge and Hygiene sands from the Whittaker well failed to reveal any positive characteristic difference between the two sands.

"The Rocky Ridge sandstone member appears to thin eastward from the Whittaker well, and perhaps aided by erosion, has practically disappeared at the Chandler well.

"There appears to be an interfingering of deposits on the east slope of the Fort Collins structure. This is evidenced by two occurrences of black slate formation in the Chandler well which were absent in the Whittaker well.

"Four sand strata were encountered between the surface and a depth of 1,245 feet in the Chandler No. 1 as compared to only one in the Whittaker well. However, two shows of gas are noted in the latter well at 696 and 770 feet, respectively, which is thought to represent a thinning toward the west, of the sands in the Chandler No. 1, inasmuch as the adjacent formations agree in the logs of both wells.

"On the whole, the inference seems to be in favor of the identification of the sand encountered at a depth of 1,246 feet in the Chandler well as being the Hygiene sand. Attempts to identify the strata above this sand with that found in the Atlantic Petroleum Co. and the Victory Oil Co.'s wells, was not considered successful because of dissimilarity. There is one exception, that being the thickness and interval to the sandstone found at a depth of 1,050 feet in the Chandler well.

"Assuming that the Hygiene sand has been penetrated in the Chandler well, a thickening of formations between the Rocky Ridge and Hygiene sandstone members is indicated."

Fort Collins Shipments

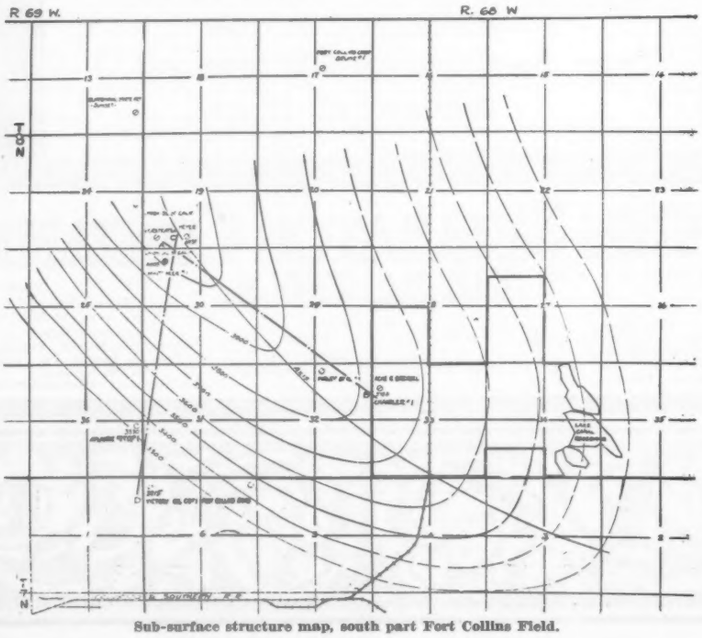
During November, the Union Oil Co. of California shipped out of the Fort Collins Field 225 cars of crude from the Whittaker well, which oil went to the Midwest Refining Co. at the contract price of $1.35 per bbl. At present there are 25 wells drilling or being started in this field. The Whittaker well is the only one in the sand and it was drilled into the Lakota about two feet and then shut down.

As the year closes, Colorado appears to have two fields that can be classed as new operations, the Fort Collins and the Moffat, the Florence Field is an old producing area of the State and the Rangely Field in Rio Blanca County is looked upon as a good possibility. The prospect for a new field near Pueblo has not come up to expectations.

In spite of the many disappointments the oil men met with during 1924 in Colorado, the State expects a large drilling campaign during the coming year. Several of the larger companies are putting down tests and a host of small firms are drilling wildcats all over the State.

Another Locating Device

Another well locating instrument has appeared in the Montana fields. This is called the Etherial Wave Magnet and is the invention of a man named Watson. The instrument is being tried out in the Sunburst Field in Montana and the Flood Watson well on Section 20-33-1 was located by it. According to the tests made by the machine, the pool of oil on that section is 600 feet long by 500 feet wide and the promoters appear to have great faith in the machine.



Sub-surface structure map, south part Fort Collins Field.

The Sunburst Refining Co. of Great Falls, Mont., has placed a mortgage and bond issue on the plant of $200,000 to cover the outstanding indebtedness of the plant, incurred during its construction. This plant has a present capacity of 2,500 bbls. and has operated continuously during the past year.

The California Co. is abandoning the old producer on Section 22-35-2 in the Sunburst Field on account of the production dropping below what it costs to pump. In the northeast quarter of Section 4-34-2, where the large wells have been coming in during the past year, the Last Chance Oil Co. has pulled out its Norem No. 1 because the production was too small to pump. On this same section, the big Johnson gusher is still holding up around 1,500 bbls. The Illinois Pipe Line Co. is still having trouble with the oil from the big well as it is reported to contain more than the allowable 2 per cent of sediment in it owing to the liability of clogging the line. The crude from this well is now being steamed so the suspended material that came out with the oil will be dropped and the upper part of the oil is taken from the tanks.

The cold weather closed down all the Montana work for several days and practically all of the Wyoming wildcats. The temperature went to 64 degrees below zero in Wyoming.

Colorado Well From Shale

A reported strike on the Tow Creek Dome in Routt County, Colorado, caused some excitement in oil circles here the past few days. The Texas Production Co. is drilling a test there on Section 7-6-86 and the first report stated this well was in the Lakota sand and flowing over the derrick. Later reports showed the oil was coming from the shale and the well not anywhere near deep enough for the Dakota formation.

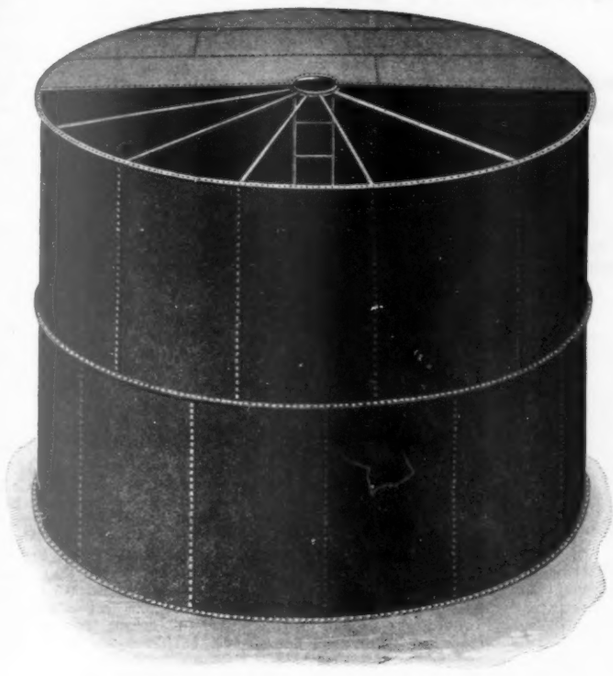
While there have been several fields in this region in the shales and some of the largest wells of the Rocky Mountain region were shale wells, this type of formation is not looked upon with any enthusiasm as a producing horizon by the oil men in general. The Texas well found this production at about 2,400 feet and the oil went over the derrick; the flow is estimated as putting out 2,000 bbls. daily and it is a high grade, paraffine base crude. The main question is how long will it last. The rule of shale production here seems to be that if a well comes in big from a shale pocket, the production will soon play out and stop, though if the showing is from 25 to 100 bbls. there is a good chance of the well continuing to produce indefinitely. In the Florence Field in Colorado, the wells have been making a small production from the shale for many years. In the Teapot Dome, the Mammoth Oil Co. struck the record shale producer of this region when the first well came in there making 28,000 bbls. from about 1,400 feet and that well has dropped to almost nothing at present. The shale production is also hard to follow; there is no way of locating the pool by surface indications and the location of the wells is a hit or miss proposition. The Pilot Butte Field in Fremont County, Wyoming, finds its best producers along a fault plane that is traced on the surface at some points. In the shale fields like the Pilot Butte and Florence, the supposition is the oil is fed to the shale fault planes from an underlying sand and much effort has been spent in all the shale areas trying to find this "mother sand" without success so far.

If the oil market for crude were higher, the shale oil operations in the Rocky Mountain region could become an important factor, but the cost of operation prevents activity at present.

Wildcats Resume Work

The wildcat wells are starting work again after the holiday season. The Meabon Syndicate, drilling a wildcat just outside the Casper city limits, is drilling at 1,840 feet in the shale and expects the second Wall Creek sand within 200 feet more. The Sheldon Dome well of the Mack Oil Co., located in Fremont County, about 50 miles north of River-

(Continued on Page 102)



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Fields of the Central West

By Whit

Conway, Botkins and others' well in Bath Township, Allen County, Ohio, makes 50 bbls. flush. Better results in Payne Field, Paulding County, indicated by U. S. A. Oil Co.'s 50-bbl. producer, making highest gravity in field. Ohio Oil Co. gets 50-bbl. well in Clark County, Illinois.

FINDLAY, Ohio, Jan. 4.—Taking everything into consideration, field work during the past week in the Central West fields was very slack. This condition was brought about by the holiday season as well as the zero weather that made development work almost impossible. When it is around 8 to 10 below zero, contractors prefer to hang up their tools and take no chances of the hazardous fishing jobs, knowing the well owner is not in any great rush to get a well completed unless it is a wildcat, for inside wells can easily be held off until weather improves. The section of the field above the Ohio River was not much colder than that on the Dixie side, as Kentucky was very lacking in completions also.

In Central Ohio the operators will go fast when conditions warrant as there is a large acreage within the old gas belt that has shown excellent wells during the past year in both the deep Trenton and Clinton as well as the Berea sand, the latter being found at various depths from 800 to 1,200 feet. The old Lima section of the Trenton Rock is another spot where work will naturally be done, with the new extension already made to work on.

Lima Field

Three fields in particular are being closely watched in the Trenton Rock area, all three being new fields showing substantial production. Hardin County, to the south of the old field, attracts the operator, due to the staying quality of the wells found there, and Shelby County, also to the south, is coming gradually forward, while Paulding County to the north is improving from day to day and should get a heavy play when warm weather comes.

During the week a total of 14 wells were reported completed in the Lima Field, with three gas wells, no dry holes and an initial production of 170 bbls., and there were 38 old wells abandoned.

In Section 22, Plain Township, Wood County, Scheidt, Hamann & Huston drilled a test on the Harley Avery farm, with a production of 15 bbls. Braclay Perry's No. 3 on the R. and H. Burkhalter, Section 29, pumped 4 bbls., while Burnell & Gage only found a 1-bbl. well at their test on the R. H. Green, Section 28. Ladd & Morrison are drilling No. 3 on the Joe Lane farm, Section 33, in the vicinity of Weston. In Freedom Township, J. Ed Matzinger is drilling No. 8 Bryan Brookover, Section 26.

In Liberty Township, Wood County, the Ohio Oil Co. abandoned Nos. 1 and 14 C. V. Coons, Section 22; No. 16 R. H. Rhamy, and Nos. 3 and 11 C. Davis, all in the same section. J. T. Montgomery pulled out No. 6 on the Surety Oil lease. Leonard Frommer did the same with No. 1 S. Slaughterbeck, Section 28. The Northern Oil Co. abandoned No. 3 George Eiting, Section 27. Hulse & Kundtz have a rig in for No. 3 D. W. Levers, Section 9. In Henry Township, the Ohio Oil Co. pulled out Nos. 16 and 17 W. S. Eberly, Section 11. In Middleton Township, F. H. Speck is drilling No. 5 on his own farm, Section 17.

In Perrysburg Township, Wood County, W. F. Johnson has started drilling No. 7 D. Lahy, and Lewis W. Johnson is drilling No. 5 Alexander Bears, Section 33.

In Bath Township, Allen County, Conway, Botkins and others' No. 5 Youngkeman farm, Section 2, is credited with a flush of 50 bbls. In Spencer Township, Wolfe Brothers and Givin Oil Co. are drilling a test on the J. R. Welch, Section 23. W. L. Parmenter has a rig in for a test on the William Sever, Section 24, and the Wayne Oil Co. is drilling a test on the Charles French, Section 23. In Marion Township, the Dean Oil Co. is putting down a test on the Michael Rahrig, Section 12.

In American Township, Allen County, Mack P. Colt has abandoned Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 18, 19 and 20 on the M. L. Bowyer, Section 18, and Nos. 2, 3, 4 and 5 G. W. Herring, Section 19. In the same township, the Ohio pulled out Nos. 1, 2 and 3 A. A. Miller, No. 7 W. L. Bechtel and No. 1 A. A. & E Miller, all in Section 13. In Richland Township, Charles Shengood abandoned Nos. 4 and 5 J. M. Neuschwander and No. 8 Peter Neuschwander, Section 26.

Auglaize County

In Moulton Township, Auglaize County, W. B. Jack's No. 1 Grant Tester, Section 33, produced 10 bbls., as did the Neely-Clover Oil Co.'s No. 2 John Rapp, Section 34. Cliff Blair and others are drilling a second test on the John Tester, Section 34. Young & Geselchen are working on No. 4 W. E. Cook, same section, and Fowler Brothers Petroleum Co. is in the sand and making a showing. This same company is drilling a test on the Fred Presser, Section 20, Douchouquet Township. In Salem Township, the Drake Oil Co. is drilling a test on the W. E. Miller, Section 34. In Noble Township the Ohio Oil Co. abandoned No. 2 Arch Ferguson, Section 31, and Nos. 2 and 3 on the Dittman Knatz No. 2 farm, in Moulton Township.

Another shallow gas well has been drilled in by Defenbaugh and others in No. 3 on the E. Snyder farm, Section 16, Butler Township, Mercer County, estimated around 2,000,000 feet from a depth of 574 feet. This is the third large flush gas well found on this lease. In Gibson Township the Central West Oil & Gas Co. is drilling No. 4 P. J. Schmidtz, Section 36. In Hopewell Township, E. A. Kuhns and others' No. 3 C. C. Ricketts, Section 1, pumped 15 bbls. The June Oil Co. is drilling a second test on the Mary E. Riese, Section 28. In Granville Township, P. Shilling's No. 1 J. B. Brunswick, Section 20, pumped 2 bbls.

In Willshire Township, Van Wert County, John W. McCray abandoned Nos. 1 and 2 B. F. Hartzog, Section 36.

In Cynthian Township, Shelby County, the Ohio Oil Co.'s test on the L. McClark, Section 28, is reported showing for 1,000,000 feet of gas, while Slagle & Johnson's test on the Henry Holscher farm, is rated at less than 200,000 feet. Lyons and others are drilling No. 1 John Bergman farm, Section 20. In Van Buren Township, W. M. Morgan's second well on the Fred Hagermyer, Section 18, is estimated at 8 bbls.

In Marion Township, Hardin County, the McGuffey Oil & Gas Co.'s No. 1 on the J. Himebaugh, Section 11, is reported at 5 bbls.

Paulding County

Better results are being obtained in the new Payne Field, in the western portion of Paulding County approximately 3 miles east of the Indiana State line, due to the finding of a better gravity oil to the north of the recently discovered pool west of Payne. The U. S. A. Oil Co.'s second test on the northeast corner of the A. M. Bailey farm, Section 34, Harrison Township, and about one-half mile northwest of the hamlet of Payne has been completed. The top of the Trenton was found at 1,400 feet and at 37 feet in nice pay sand was encountered and before the tools could be raised from the hole, a volume of oil shot out the casing and over the crown block. It took some little time to get the tools out of the hole and connect the well to tankage and some oil was lost. This well flowed quite often and while not a gusher, it means much for the future of the field. The well is estimated at 50 bbls., although its first head was considerable more. The oil from the well was tested the third day by the pipe line people who pronounced it the highest gravity oil yet found in the Payne area, and good enough to run into the pipe line without steaming. The well is approximately 600 feet across the line from the Aetna Drilling Co.'s No. 3 on the Thomas Lamb farm, which also flowed when drilled in, and which is reported still producing between 20 and 30 bbls. a day, without being shot. Offsets to the Bailey well are on leases held by the Aetna Drilling Co. on the Thomas Lamb, Blackburn Brothers & Burns of Steubenville and Marietta, on the E. Stillwell 35 acres, and John T. Schenck of Chicago, who is now drilling just across the farm line on the C. C. Springer 79 acres, which is about due for completion.

Stanton Isaacs of Charleston, W. Va., has completed what looks like a 20-bbl. producer on the Mary Stabler 52 acres, Section 3, Benton Township, and expects to start No. 2 at once. Harmon, Roberts and others have a steady production on the Jacob Stabler 120 acres, Section 3, with three tanks of crude waiting to be run by the Buckeye Pipe Line Co.

D. M. Lipps' well on the Otto Lentz 20 acres, Section 9, Benton Township, where a premature explosion took place Thanksgiving day while lowering the first shell containing 20 quarts that exploded at the bottom of the casing, has been put in original condition by the Agnew Torpedo Co. and shooter Fred Cunningham and is ready to take a second shot. This well is reported as making a very good showing.

A double test has just been taken on the Robinson & Mandell gas well on the William Wood farm, Section 17, Benton Township, and rock pressure was found to be 575 pounds. Gas from this well is being used in drilling the Finan farm well.

E. Stevenson of Chicago, who has drilled three wells in the Payne Field, has just shipped in a carload of casing to Edgerton for further operations.

Measurement has been taken by the pipe line between the Payne Field and Ohio City, a distance of 28 miles, which is the first step toward the Payne Field getting a direct connection with the main line. The field now has an estimated daily production around 200 bbls. and close by refiners are anxious to secure the product at the present market price, but the operators feel safe in letting the present line take care of the production until a connection is made with the main line. At this time oil is being shipped from the field by the Buckeye Pipe Line Co. in tank cars.

Indiana Field

A few completions are reported from the fields of Indiana but the most important of the number was a wildcat drilled by D. L. Thompson on the John Kelley farm, Section 21, Wabash Township, Adams County, which showed a Trenton Rock production of 30 bbls., and liable to cause a flurry in that part of the field, which lies close to the Ohio State line. In the same township W. J. Heeter, an old-time operator, drilled No. 4 on the J. H. Barr farm, Section 28, and got a 2-bbl. well and is drilling Nos. 5 and 6 on same farm. In Blue Creek Township, same county, O. D. Arnold has abandoned Nos. 1 and 4 P. E. Habegger, Section 32. In Jefferson Township, David Abromson pulled out Nos. 1 and 2 A. F. Adams farm, Section 16.

In Liberty Township, Wells County, the Lewis Oil Corp.'s No. 11 on the J. E. Davis, Section 19, pumped 10 bbls.

In Penn Township, Jay County, the American Engineering Co.'s No. 1 on the James Sutton, Section 16, near Bablec, has been completed and good for 5 bbls. No. 2, same farm, is drilling. Masters & Makeever Brothers are drilling a test on the C. C. Harris, Section 13; and Bennett, Gusta and others are at work at a test on the A. Irey, Section 3. In Jackson Township, same county, D. L. Thompson and others' No. 1 B. Brunson, Section 8, pumped 2 bbls. James J. Adams has abandoned No. 3 S. W. Reed, Section 12, and O. E. Pence pulled out Nos. 3 and 4, also same township. O. E. Whittenghill is drilling a test on the A. N. Wilson, Section 12, Richland Township. In Bear Creek Township, same county, the Quaker City Oil & Gas Co.'s No. 1 Mrs. O. Black farm, Section 21, pumped 30 bbls. and No. 2 is drilling. The National Supply Co. abandoned Nos. 1, 3, 4 and 5 W. R. Elder, Section 24, same township. In Wabash Township, same county, the same company pulled out Nos. 1, 2, 3, 4 and 6 G. Ineichen, Section 19.

In Delaware Township, Delaware County, the DeSoto Oil Syndicate's No. 9 J. W. Goings, Section 16, pumped 3 bbls. In Licking Township, Randolph County, the Hartford Oil & Gas Co.'s test on the C. J. Cermine, Section 36, was a duster.

Illinois Field

There were seven completed wells reported from the Illinois field for the past week, of which three were dry, and the new production amounted to 129 bbls. The wildcat venture of McCurdy and others on the John Baxter farm, Section 28, Pope Township, Fayette County, developed into a dry hole.

In Martin Township, Crawford County, McGhee, Curtis and others' test on the Z. A. Neeley farm was a duster.

In Clark County, Parker Township, W. F. Small drilled a duster in a test on the S. Turner farm, Section 18, at a depth of 500 feet. In Casey Township, the Gillett Oil Corp.'s No. 2 on the northwest corner of the William Reisinger, Section 25, pumped 30 bbls. from the stray sand at around 1,410, with No. 3 drilling on the same farm, as well as No. 1 on the C. W. Slater, Section 25. In Martinsville Township, the Ohio Oil Co.'s No. 15 S. N. Brosman, Section 30, pumped 50 bbls., and Rhodes & Keith's No. 3 D. Morgan, same section, pumped 30 bbls. In Johnson Township, same county, Squires and others' No. 11 Charles Snearley, Section 24, pumped 18 bbls., and No. 12 is drilling.

KING'S HOARD IN OIL TINS

Part of the dethroned King Hussein's luggage on his withdrawal from Mecca consists of about a dozen Standard oil tins, which were extremely difficult to lift. In each of them were no fewer than 20,000 golden pounds, which King Sussein saved from his subsidy received from Great Britain, and from other sources of income.

Simplicity – the Keynote!

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Kentucky—Tennessee

By Vern T. Whitney

Standard of Kentucky gets 2,000,000-foot gas well in Clay County, its first effort as producer. Union Gas & Oil Co. has 60-bbl. well in Martha district extension, North Weir Field, Kentucky. No. 4 C. K. Dobyne makes 40. White Plains Oil Co. finds 160-bbl. producer in Frost Pool, Allen County.

BOWLING GREEN, Ky., Jan. 5.—The striking of a 2,000,000-foot gas well by the Standard Oil Co. of Kentucky in a wildcat test approximately 1 mile from the mouth of Goose Creek, near Oneida, in the northern portion of Clay County, was the leading point of interest during the week past in the Kentucky Field. The sand was uncovered at 1,600 feet in the Silurian (Niagara, Clinton) strata. This is the first well ever drilled by the above company as just recently it decided to go into the producing end of the business. This gasser is 3 miles from a dry hole recently finished by the Petroleum Exploration, on the Mowbray-Robinson tract, near Oneida.

This new wildcat is in a portion of Clay County that heretofore has shown no production of any value. The Standard interests have considerable acreage around the new strike and other companies are well represented. At present only one other test is under way in the county, that being drilled near Cradle Bow, which is idle at this writing at 1,500 feet.

Clay County is in southeastern Kentucky in the coal measures of the Pennsylvanian System. It is bisected by the eastern Kentucky geosyncline and is drained by Goose Creek, Red River and other minor tributaries of the Kentucky River. According to J. S. Hudnell, assistant geologist of the Kentucky Geological Survey, the chance for finding gas in Clay County is more favorable than for the striking of oil.

A summary of the week's work shows a decrease of 352 bbls. in production, the same number of completions, 8 less producers, 7 more dusters and 1 more gasser when compared with last week's figures. The wells were distributed by counties as follows:

County—	Comp.	Prod. Wells	Prod.	Dry	Gas
Barren	5	2	11	3	0
Allen	4	2	165	2	0
Lee-Owsley	4	3	20	1	0
Lawrence-Johnson	4	4	118	0	0
Johnson-Magoffin	3	2	28	0	1
Warren	3	3	87	0	0
Owensboro district	2	1	15	1	0
Wayne	2	0	0	2	0
Floyd	1	0	0	0	1
Clay	1	0	0	1	0
Estill	1	0	0	1	0
Total	30	17	444	10	3
Last week	30	25	796	3	2
Difference	0	8	352	7	1

North Weir Field

In the North Weir Field of Johnson and Lawrence Counties, the Union Gas & Oil finished its initial test on the Caney Sparks farm in district No. 22 for 60 bbls. flush from the Weir sand at an approximate depth of 700 feet. This well is important as it extends the producing area of the Martha district approximately a half mile to the north of the Gene Holbrook tract and slightly over 1 mile from the C. K. Dobyne and Ferguson leases which have shown some exceptionally fine wells. In district No. 22-A the Union's No. 4 on the C. K. Dobyne No. 1 farm made 40 bbls. while its No. 3 on the Foster Ferguson came in for 15 bbls. from the Weir sand.

The northern extension of the Martha Field has so far proved to be the most prolific producing area in the Lawrence and Johnson County area. Recent completions indicate that production is found in larger quantities as the pool extends northward. As acreage there is held by well financed operators a large amount of new territory will be tested out as soon as road conditions permit.

In district No. 32, the Cumberland Petroleum Co.'s No. 6 J. M. Wheeler made a 3-bbl. stripper from the Weir sand.

The Union Gas & Oil Co. is cleaning out its No. 35 J. J. Gambill, No. 8 William Lester, No. 3 Jean Holbrook farm, No. 2 Foster Ferguson, No. 1 farm; No. 9 L. H. Skaggs, No. 6 James Diles, No. 6 D. H. Ferguson, No. 1 Caney Sparks, and No. 2 on the Jean Holbrook No. 2 farm; R. N. Sparks No. 1 was drilling in lime; No. 15 Lewis Skaggs was being spudded and a rig is being moved to No. 8 location on the J. C. Gillem No. 1 farm.

South Weir Field

The best well of the week in the South Weir Field of Johnson and Magoffin Counties is the Bed Rock Petroleum Co.'s No. 17 J. H. Arnett in district No. 31. It showed 25 bbls. the first pumping from the Weir sand at 876 feet.

In district No. 29, the Carter Oil Co.'s No. 8 Paris Long settled to 3 bbls. from the Weir sand.

In the southeastern portion of Magoffin County the Pure Oil Co. recently brought in, according to reports, a gas well estimated at 2,000,000 feet of gas per day. It is on Trace Fork of Licking River. No. 2 is being started about 3 or 4 miles to the south of No. 1. Quite a bit of wildcat work will be done in this section during the early spring by the Pure Oil Co., Carter Oil Co. and the Petroleum Exploration.

Lee-Owsley Counties

A semiwildcat on the Edgar Manis tract, one-half mile south of the gasser on the Addison lease and 1½ miles south of the Idamay Field proved disappointing in the regular Idamay pay.

In district No. 35, the Black Gum Oil Co.'s No. 9 Gourley-Redman & McGuire pumped 15 bbls. at a total depth of around 1,400 feet. Combs Brothers got a 2-bbl. pumper in No. 4 Elmer Evans at 1,397 feet. H. O. Randall's No. 1 Rowland is estimated at 3 bbls. after the Idamay sand was treated to an 80-quart shot of nitro.

C. W. Friend's No. 1 William Gabbard, southwest of the Petroleum Exploration's gas field, on Little Sturgeon Creek, was completed at 1,077 feet, 41 feet in the sand and is being cleaned out after a shot. Two bailers of salt water and a bailer and a half of oil were taken from the hole two hours after the shot.

Two wells were started the past week in the Owsley County area, one on the Susan Tincher lease owned by Combs Brothers and one on the Logan Combs tract being developed by Hobbs Brothers. The Henry Oil Co.'s No. 2 test on the Daniels-Foreman lease in the long neck of Owsley County is progressing very rapidly and should be completed within 10 days if no trouble is encountered. No. 1 on this tract is flowing and pumping about 20 bbls. daily and is considered a very good well. Quite a bit of leasing is going forward in this area and a number of locations have been staked that will be drilled shortly.

Wayne County

Two dry holes were reported from the Big Sinking district in Wayne County. Marsh & Shearer's No. 1 J. A. Brown and Pyle & Abbott's No. 1 J. C. Cooper finished at 300 and 670 feet, respectively from the Beaver sand.

In district No. 8 of Estill County, Scott Pratt and others' No. 1 Williams was abandoned at approximately 500 feet, in a sand below the black shale.

Regional Metamorphism

As to the effect of regional metamorphism on the oil and gas sands in Kentucky, J. S. Hudnall, assistant geologist of the Kentucky Geological Survey, has this to say:

"Many areas in Kentucky which at one time undoubtedly contained oil and gas in commercial quantities, were subjected to the stresses and strains of the period that formed the Appalachian Mountains and the great Pine Mountain Overthrust fault. The recrystalization of the rock caused the pore spaces, formerly occupied by petroleum and gases, to become filled and the rocks desolated of their oil and gas. The regional metamorphism has so affected many areas that strata which might be expected to contain oil and gas in commercial quantities are now barren. The deeper the sands are below the surface, the greater has been the alternation, hence the older sands were first made barren.

Based upon this theory, the following tentative classification of the counties and oil sands is made. All counties in eastern Kentucky which do not appear in the list below are thought to be barren of oil and gas in the respective sands from which list they are omitted.

ORDIVICIAN SANDS: (Trenton, Sunnybrook, etc.) It is believed these sands will not produce in any county lying within the Eastern Coal Field.

SILURIAN SANDS: (Niagara, Clinton). Production in commercial oil will be limited to Pulaski, Lincoln, Rockcastle, Jackson, southern Madison, Estill, Lee, Owsley, Powell, Wolfe, Morgan, western Elliott, Rowan, Bath, eastern Fleming, Lewis, Greenup and Carter Counties. Gas may be found in addition to the above list in McCreary, Whitley, Laurel, Clay, Breathitt, Magoffin, Lawrence and Boyd Counties.

DEVONIAN SANDS: (Corniferous and Gordon). All of the above counties are included here with the following additions favorable for gas only; Knox, Clay, Floyd, Johnson and Martin Counties.

MISSISSIPPIAN SANDS: (Berea, Weir, Big Injun, Big Lime, Maxon, etc.) Regional metamorphism is not prohibitive in any of the foregoing counties for commercial production in oil or gas. The following counties may be added as favorable for gas only: Northern Leslie, northern Perry, northern Knott, Floyd (most favorable) and northern Pike Counties.

PENNSYLVANIAN SANDS: (Salt sands, Jones, Epperson, Wages, etc.) The Pennsylvanian sands being the youngest, consequently at the shallowest depth, may produce from any of the above counties.

The following counties are too highly metamorphosed for commercial production in any sands with limited local exceptions: Bell, Harlan, southern Leslie, southern Perry, Letcher, southern Knott and southeastern Pike Counties.

The Frost Pool at Rodemar Station in Allen County again supplied the banner completion for the week in the western division. It is the White Plains Oil & Gas Co.'s No. 5 on the J. R. Hornbuckle tract which made 160 bbls. naturally from the new deep pay strata at approximately 77 feet below the black shale. This well is 300 feet east of No. 3 that made 288 bbls. and 300 feet west of No. 4 which was a duster in both the shallow and deep sands. This same concern (Snowden Brothers) is starting No. 6 Hornbuckle and No. 1 on the Reeves & Richardson farm one-half mile south of the former.

In the Kerley Pool, midway between the Mitchell and Wheat districts, H. A. Kiser got a 5-bbl. pumper in No. 5 Travelstead at 320 feet, approximately 65 feet below the black shale. No. 4 Lyle of Bastrus & Work was finished dry at 260 feet, 110 feet below the shale. It is south of No. 3 Carver. On the Wheat farm operated by Parson & Bastrus, No. 6, 520 feet south of No. 4, was dry and abandoned at 307 feet, 100 feet below the shale.

Gathering Lines Extended

The Inter-Cities Oil Co. has extended its gathering line from the Wheat Pool in western Allen County, southwest to the Mt. Aerial and Stringer Pools, on the Allen-Simpson County line, which is welcome news to the producers in that district. This extension of 10 miles will connect directly with its refinery at Scottsville. E. R. Wyant, local manager of the Inter-Cities, has completed the installation of a lubricating compound plant with a capacity of 60 bbls. daily and is now manufacturing greases and lubricants. The capacity of the refinery is 150 bbls. daily which can be increased to 300 bbls. The Somerset price is paid for crude with a premium in some instances for extra high gravity.

Warren County had three completions for the week, all producers. The best was the Ruby Consolidated Development Co.'s No. 5 Price-Hall, one location east of No. 1 Smith, which pumped 40 bbls. from a total depth of 1,220 feet. The bottom of the shale was had at 1,114 feet. Two sands were found, the first from 1,121-1,124 feet and the second from 1,174-1,186 feet. The Price-Hall tract is in the McLemore-Gillespie-Price sector southwest of Bowling Green and is considered one of the best producing leases in that area. P. H. Lavelle's No. 6 on the W. R. Hunton farm, east of No. 4, showed a flush of 35 bbls. at 1,108 feet. Shale was topped at 925 feet and drilled through at 1,005 feet. Two sands were encountered, one from 1,060-1,068 feet and the other from 1,079-1,096 feet.

Barren County

For the first time in many weeks Barren County showed three dry holes, all of them, however, of a wildcat nature. L. J. Emery, Jr. & Sons' No. 2, on the Bridges farm, 1,000 feet from No. 1, between Ben Ayr and Glasgow in the extreme western portion of the county, was dry at 685 feet, 225 feet below the black shale. No. 1 was drilled to 1,400 feet below the shale without results. On the Settle farm, 6 miles south of the famous Button place, Stafford and associates' No. 1 was a duster at about 100 feet below the shale. The Esslinger Oil Co.'s No. 1 Bud Mansfield failed to materialize at 410 feet and was abandoned. It was drilled in an effort to extend production on the Taylor lease in the Gorby Pool to the southeast.

The first test on the Chamberlin farm being developed by T. L. Gorby extended production in the Gorby Pool, 1¾ miles to the southwest of the Lessenberry tract when it pumped 5 bbls. from the 450-foot level.

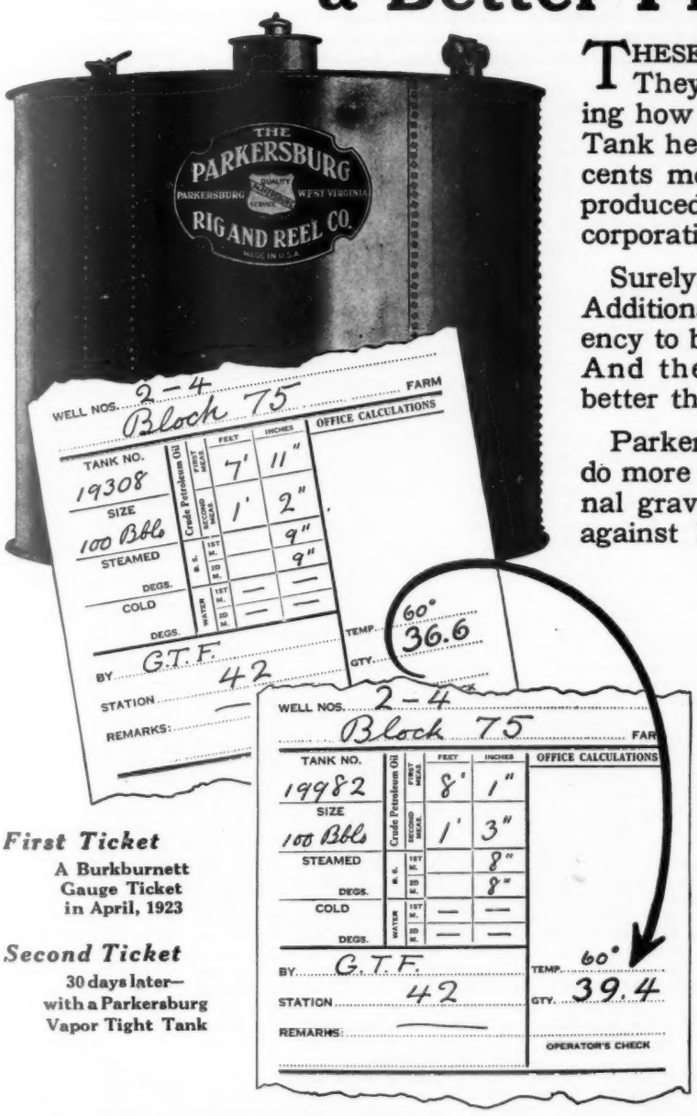
The only completion made in the Emery-Moore Pool last week was Ziegler Brothers' No. 3 Bradford, east of No. 2, which made 6 bbls. on jack at 552 feet. Shale was from 302½ to 352½ feet and the sand from 541 to 547 feet which was shot with 30 quarts of nitro.

Owensboro District

In the Hancock and Ohio County Fields one producer and one dry hole is reported. I. N. Harkless' No. 6 L. A. Casey, 400 feet northeast of No. 5, made 15 bbls. on jack from the Barlow sand.

In the vicinity of Collier Station, east of Whitesville, the wildcat of Thomas and others on the J. H. Evans farm is showing for production at an approximate depth of 470 feet in the Jett sand.

A Better Tank *and* a Better Price for Oil



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Pennsylvania-West Virginia

By D. S. Wakenight

Adams Oil Co. gets 25-bbl. well in Goose Creek Pool, Ritchie County, West Virginia. Klug Brothers, 10-bbl pumper. Gas companies active in Lewis County. Deep sand in Southeastern Ohio has more dusters than producing completions. Ohio Fuel Supply Co.'s deep test in Coshocton County, Ohio, dry.

PITTSBURGH, Pa., Jan. 5.—There was nothing developed in the eastern fields during the past week of enough importance to attract attention to any section. In the list of completions there were more than the usual number of dry holes and the oil producers below the average size. Owing to the holidays and the weather, fewer wells were completed and in some districts operations almost entirely suspended until after the first of the year. The slowing down of operations in the eastern fields has little or no bearing on present conditions. The kind of territory at hand can wait, no section calling for active development.

In the Goose Creek Pool, Grant district, Ritchie County, the Adams Oil Co. got a 25-bbl. producer in the Big Injun sand at No. 5 on the James Newbrough farm. In Murphy district, the Hope Natural Gas Co. completed a gasser in the same formation at a test on the James Rollins farm. On Dutchman Run in the same district, Ruth & Strong drilled down from the salt sand to the Big Injun, formerly a light oil well, and secured a fair gasser in the lower formation. The Hope Natural Gas Co. has a gasser in the Squaw sand at a test on the Trainer Mitchell farm. The Carnegie Natural Gas Co. has a gasser in the Berea grit at a test on the W. F. Bird farm. On Hughes River, the Southern Oil Co. drilled its test on the Lemon heirs' tract through the Big Injun sand. It is dry in this formation but a light oil producer in the salt sand. On Bonds Creek, Clay district, the Pittsburgh & West Virginia Gas Co. has now drilled its test on the J. H. Heflin farm through the Gordon sand to a total depth of 2,634 feet and dry in all sands. At this time, Ritchie County has more wells drilling and rigs up than any other county in West Virginia.

Gilmer County

On Dry Run, DeKalb district, Gilmer County, the Hope Construction & Refining Co. has a dry hole in the Big Injun sand at No. 5 on the F. C. Gainer farm. In the same district, on Third Run, the same company completed in the Big Injun sand a test on the W. W. Floyd farm, good for 3,000,000 feet. In Troy district, the Hope Natural Gas Co. completed in the Big Injun sand a test on the J. W. Wood farm. It is a gasser.

In the Burning Springs district, Wirt County, the Endeavor Oil Co. has completed and shot in the second Cow Run sand No. 14 on the W. H. H. Wheaton farm. It is a very light pumper at the head water of Two Mile Run. On Fish Creek, Liberty district, Marshall County, Klug Brothers & Co. have a 10-bbl. pumper in the Gordon sand at a second test on the J. W. Mason heirs' farm. In the same district, the Decom Development Co.'s second test on the W. R. Evans farm is a gasser in the Gordon sand.

Lewis County

In Court House district, Lewis County, the White Oak Oil & Gas Co. has drilled its test on the F. L. Bond farm through the fifth sand to 2,900 feet. It is a duster. In the same district, the Crystal Oil & Gas Co. has a gasser in the Gantz sand at a test on the John Hammer farm. In Collins Settlement district, the Pittsburgh & West Virginia Gas Co.'s second test on the J. W. Wilson farm is a fair gasser in the same formation. Owing to the activity of the gas companies, Lewis County shows increased activity. The Pittsburgh & West Virginia Gas Co. has a rig up on the Enis Clark farm. The Hope Natural Gas Co. has a rig up on the Mary E. Edmonston farm and R. R. Horner has completed one on the T. Minter Lawson farm.

Kanawha County Gassers

On Big Sandy River, Big Sandy district, Kanawha County, the United Fuel Gas Co. has a gasser good for 625,000 feet on the Osborne farm. On Doctors Creek, the same company has a fair gasser on the L. W. Seabolt farm. On Little Sandy River, Elk district, the same company's second test on the J. E. & D. E. Canterbury farm is good for 365,000 feet. All in the Big Injun sand. On Lens Creek, Louden district, the same company has completed in the Big Lime tests on the Fannie Boyd and W. M. A. Bradford farm. Both are fair gassers. On Big Coal River, Washington district, the South Penn Oil Co. has a gasser in the Big Lime good for 1,250,000 feet at No. 3 on the Black Band Coal Co.'s tract. On Little Coal River, Washington district, Boone County, the same company's No. 4 on the Yawkey-Freeman tract is a good gasser in the Big Lime formation. No. 5 on the same tract is drilling.

Cabell County

On Fudges Creek, Grant district, Cabell County, the Aetna Oil & Gas Co.'s test on the W. B. Wetherholt farm has been completed and shot in the Berea grit and showing for a 3-bbl. pumper. In the same district, the Florence Oil Co. is drilling a test on the J. H. Birch farm. On Big Two-Mile Creek, the Aetna Oil & Gas Co. has a rig completed for a test on the W. K. McCullough farm. On Lens Creek, Louden district, Kanawha County, the Owens Bottle & Machine Co. has a gasser in the Big Lime at No. 4 on the R. G. Quarrier farm. On Anna Mariah Creek, Sheridan district, Calhoun County, the Thomas Crowley Oil Co. has a 1,000,000-foot gas well in the Berea grit at a test on the C. Thomas farm. The well is also spraying oil at the rate of 2 bbls. a day.

Lincoln County

In Union district, Lincoln County, the Superior Gas Co.'s test on the L. Adkins farm is a gasser in the Big Injun sand. In the same district, the Cambridge Gas Co.'s second test on the C. Adkins farm is a gasser in the same formation. In Carroll district, the Moore-Rock Oil & Gas Co.'s second test on the C. A. Chapman farm is a gasser in the same formation. L. R. Sweetland has drilled a test on hisown farm into the Big Injun sand. It is a small gasser. The Foote Oil & Gas Co.'s test on the W. W. Lucas farm is a gasser in the Big Injun sand. In Center district, Wetzel County, the Manufacturers Light & Heat Co.'s No. 3 on the William Knapp farm is a 4-bbl. pumper in the fifth sand. The United Fuel Gas Co.'s test on the Anna May Looney farm in Smithfield district, Roane County, is a gasser in the Big Injun sand. The Cromwell Oil & Gas Co.'s test on the O. F. Taylor farm is a gasser in the same formation. The Heck Oil Co. has abandoned its test on the A. W. Thorn farm.

In Union district, Ritchie County, Braden, Powell & Co. have a Big Injun sand gasser at a test on the McDonald heirs' farm. In Sardis district, Harrison County, the Clarksburg Light & Heat Co.'s test on the Chieftain Coal Co.'s property is a gasser in the Maxon sand. In Union district, Pleasants County, the Monogahela Oil Co. completed in the Cow Run sand a test on the Dora E. Wagner farm, not good for more than 3 bbls. a day. On Big Buffalo Creek, Union district, Tyler County, Morgan Brothers' test on the Ferry heirs' farm is a gasser in the Big Injun sand good for 2,000,000 feet. In Otter district, Braxton County, the West Virginia Central Gas Co. has a gasser in the Big Injun sand at a second test on the O. G. Beckett farm.

Tests in Gilmer County

In Center district, Gilmer County, the McCall Oil & Gas Co. has started to drill on the E. Miller farm. In the same district, Britton Brothers are rigging up on the Baptist Church lot. The Pittsburgh & West Virginia Gas Co. is down 1,500 feet at a test on the Okey Stalnaker farm and fishing for a bit. In Murphy district, Ritchie County, the Beren Oil Co. is drilling down to the lower sand an old well on the L. L. Elliott farm. In Lincoln district, Marion County, the Hope Natural Gas Co. has started to drill on the Alvira Robey farm. In Clay district, Harrison County, the same company is hauling rig material to a location on the E. M. Ross farm. In Skin Creek district, Lewis County, the Re Oil & Gas Co. has shut down for orders at 3,310 feet at a test on the T. J. Lough farm. In the same district, the White Oak Oil & Gas Co. has made a location on the H. C. Ramsey farm. In Union district, Lincoln County, the Columbia Gas Co. has a rig up on the John Walls farm. In Carroll district, A. F. Marsh is drilling a test on his own farm. In Grant district, Cabell County, the Florence Oil Co. is due in the Big Injun sand at a test on the J. H. Birch farm. In Carroll district, Lincoln County, the West Side Gas Co. is due in the Big Injun sand on the Charles Stowers farm. In Ten-Mile district, Harrison County, R. T. Lowndes is building a rig on the J. H. Benedum farm.

Southeastern Ohio

The deep sand territory in southeastern Ohio completed more dusters than oil and gas producers. In the southwest quarter of Section 27, Perry Township, Hocking County, the Ohio Fuel Supply Co. drilled a test on the E. Emler farm through the Clinton sand and found nothing. In Section 3, Hopewell Township, Perry County, the Atha Oil Co. had the same luck at a test on the George Trout farm. In Lot 5, Monroe Township, Holmes County, Burtner, Morgan & Stephens have a duster in the Clinton sand at No. 3 on the A. R. Mackey farm, one-fourth mile south of the same company's first test on this farm. In Lot 8, same township, the Ohio Fuel Gas Co.'s No. 3 on the Charles Barnes farm is a gasser in the Clinton sand good for 1,000,000 feet. In the southwest quarter of Section 25, Rush Creek Township, Fairfield County, the Nypenno Oil Co. drilled a test on the George Everett farm through the Clinton sand without getting a show of oil or gas.

Shallow Sand Dusters

In Section 13, Enoch Township, Noble County, C. D. Harper & Co. completed two tests on the Samuel Hopman farm. Both are dry. In Section 31, the same parties have a duster in the Buell Run sand at a test on the Arthur Fogle farm. In Section 36, C. D. Harper & Co.'s test on the Martha E. Murray farm is a duster in the 800-foot sand. In Section 26, Olive Township, Williams & Clark have a duster in the 700-foot sand at a test on the Ruth Pryos farm. In Section 3, Brookfield Township, J. W. Blackburn and others have a 3-bbl. pumper at a depth of 300 feet on the A. Woods farm.

Deep Duster in Coshocton County

In Linton Township, Coshocton County, the Ohio Fuel Supply Co. has now drilled its test on the Charles Williams farm to a total depth of 4,448 feet. It is dry in all sands. In Section 12, Monroe Township, the same company is drilling another deep test on the William Snell farm. It has reached a depth of 3,960 feet. The same company has a deep test drilling on the Luella Estep farm in Section 13, Knox Township, Guernsey County. In Newton Township, Licking County, F. M. Rugg & Co. have completed a test on the T. B. Greene farm and No. 5 on the J. I. Hughes farm. Each is good for 3 bbls. in the Berea grit. In Madison Township, W. W. & A. T. Wehrle's No. 3 on the O. C. McClelland farm is a gasser in the Berea grit. In Liberty Township, Washington County, the People's Banking & Trust Co. has a 10-bbl. pumper in the Cow Run sand at No. 15 on the E. H. Rake farm.

Near the Interesting Point

In Section 5, Newark Township, Licking County, W. W. & A. T. Wehrle are near the interesting point in the Trenton Rock at a second test on their own farm. They have reached a depth of 3,800 feet. In Section 6, Licking Township, the Carter Oil Co. is down 1,800 feet at its proposed Trenton Rock test on the G. E. Tish farm. In Lot 10, Monroe Township, Holmes County, the East Ohio Gas Co. has drilled a well on the Welcome Christian Church lot into the Clinton sand. It is a gasser good for 500,000 feet.

Spraying Oil

In Section 4, Green Township, Hocking County, the Red Top Oil & Gas Co. has completed and shot in the Clinton sand No. 6 on the Chute heirs' farm. The well sprayed 10 bbls. the first 24 hours. In Lot 8, Hanover Township, Licking County, the E. H. Everett Co. is building the rig for another test on the Felix Montgomery farm.

Light Pumper in Athens County

In Athens Township, Athens County, the Fisher Oil & Gas Co. drilled a second test on the Had Hibbard farm into the sand good for 5 bbls. a day. This location is 1,000 feet north of the Southern Oil Co.'s second test on the D. M. Murphy farm. On the J. C. Wilks lot in Athens City, Athens County, the Athens Oil & Gas Co. has a show for a 5-bbl. pumper in the Berea grit. This location is 600 feet east of the gas well on the J. E. Sherilock lot.

Southwest Pennsylvania

In Richhill Township, Greene County, John Blair has completed No. 6 on the W. J. Bryan farm. It is a fair gasser in the Gordon sand. In the same township, the Manufacturers Light & Heat Co.'s test on the Chess farm is dry in all sands. In Perry Township, Maxim & Davis have a gasser in the Big Injun sand at a test on the T. J. Patterson farm.

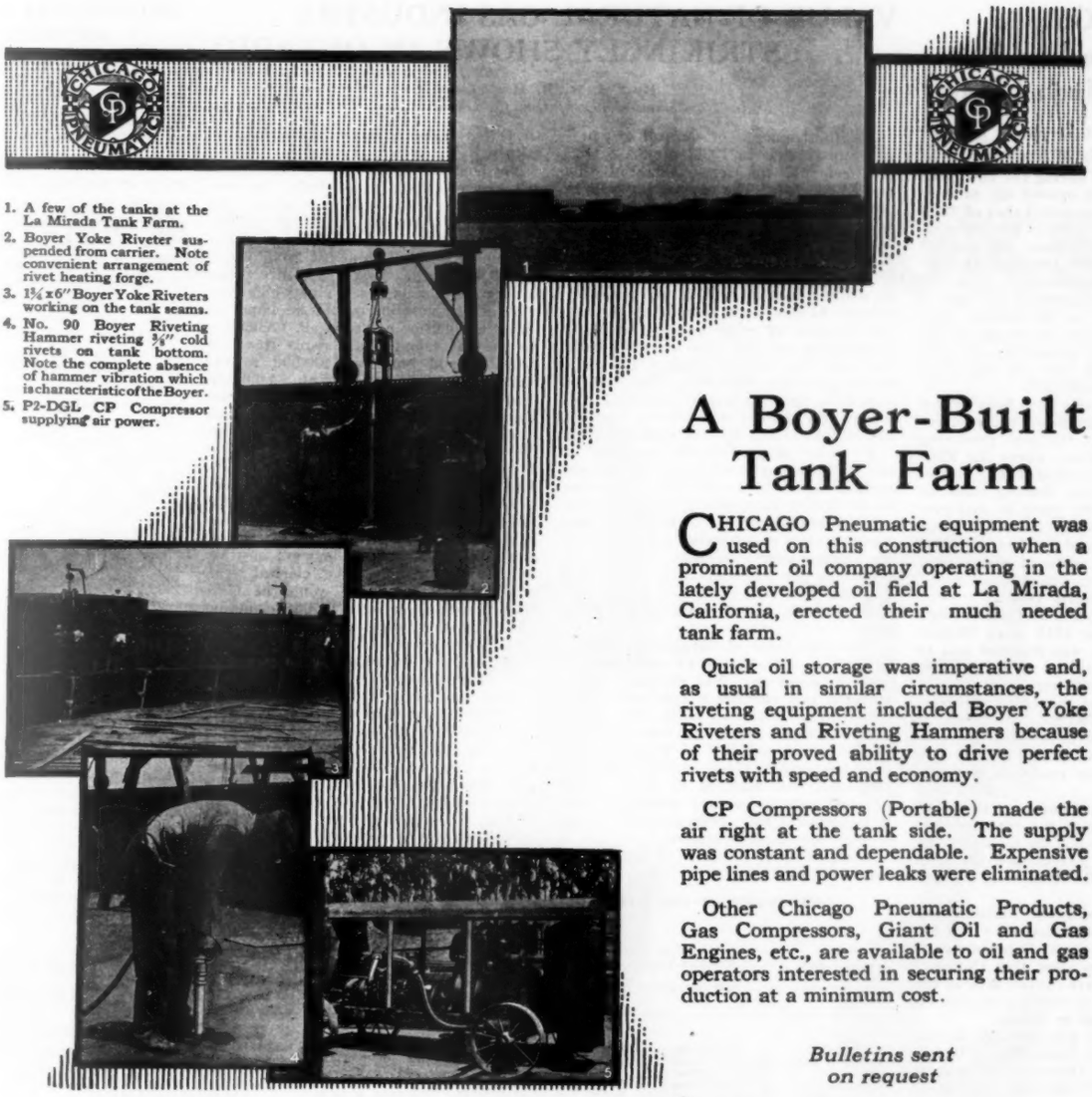
No Better

On Chestnut Ridge, near Ligonier, Westmoreland County, Pennsylvania, the Peoples Natural Gas Co.'s deep gasser on the Booth-Flinn property failed to respond when drilled deeper. At 7,428 feet gas was developed (not in commercial quantities) and it was expected to be a gusher when drilled deeper. After drilling 14 feet below the depth at which the gas was developed it showed no improvement and is shut down. They are as yet undecided as to drilling deeper.

Fishing at Deep Test

Near Terra Alta, Portland district, Preston County, West Virginia, the Hope Natural Gas Co. is fishing for a bailer at about 3,000 feet on the Joseph Gordon farm. The Reserve Gas Co. is drilling at 1,000 feet at its deep test on the

(Continued on Page 84)



1. A few of the tanks at the La Mirada Tank Farm.
2. Boyer Yoke Riveter suspended from carrier. Note convenient arrangement of rivet heating forge.
3. 1¾ x 6" Boyer Yoke Riveters working on the tank seams.
4. No. 90 Boyer Riveting Hammer riveting ¾" cold rivets on tank bottom. Note the complete absence of hammer vibration which is characteristic of the Boyer.
5. P2-DGL CP Compressor supplying air power.

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NATURAL GAS DEVELOPMENTS

Ohio's Gas Output Shows Decline But Value Much Greater

COLUMBUS, Ohio, Jan. 5.—Although approximately 963 new gas wells were drilled in Ohio during the past year and many new fields opened up, production is not expected to equal that of 1923 or even that of many years preceding it, according to J. C. Wilson, gas and oil inspector of the Mines Division, Department of Public Relations.

Value to the producers of the gas is expected, however, to be greater than ever before in history, according to Mr. Wilson. The 1924 production is estimated at 52,222,125 feet and the value is estimated at $24,365,277.

Many new gas wells have been drilled in the southern Ohio fields while others have been found in the coal producing counties and in regions where the Mine Division is not empowered to inspect them because the law defining such inspections can only be made in coal producing regions of which there are about 30 counties listed and in fact all Ohio counties where gas wells of any special value have ever been drilled.

1915 Record Year

The greatest production of gas in Ohio was during the year 1915 when 79,510,132,000 feet of gas was reported and to the producers was valued at $17,391,060.

Production in 1923 estimated at 57,329,000,000 feet and the value presumed to have been $13,286,306. A record is available only since 1911 when the production amounted to 49,449,749,000 feet and the value to the producers was $9,367,347.

A gradual increase has been shown in the value of gas since the early records have been available but the highest value prior to 1924 was placed upon the 1918 production of 61,261,069,000 feet at $24,234,741.

Statistics gathered by the United States Geological Survey and some of which are furnished by the State Department of Industrial Relations show that Ohio has for a number of years ranked fifth in the production of gas in the United States.

All Used in State

One-fourth of all gas produced in this country is obtained from West Virginia and its estimated value at the well is about 10 cents per 1,000 feet. The value of Ohio gas has been computed at 18 cents per 1,000 feet at the well, but, according to State Inspector Wilson, much of it is available to producing companies as low as even one-half of this amount. Value of West Virginia gas to the consumer has been estimated by the Government at 35.6 cents per 1,000 feet. The value of Ohio gas to the consumer is fixed at 47 cents per 1,000 feet.

More than twice as much as is produced in Ohio is consumed in this State. It is estimated that 121,326,735,000 feet of gas will have been used in Ohio at the close of the current year. This will be about 16 per cent of all the gas produced in the United States. Ohio consumes virtually all its own gas, although many States deliver their supply to another and depend upon neighboring States for their own. The chief supply of this fuel in Ohio is said to be derived from West Virginia.

RATE INCREASE GRANTED

OKLAHOMA CITY, Okla., Jan. 3.—The application of the Hominy Light & Gas Co. for increase in gas rates at Hominy, Okla., was granted by the Corporation Commission. The new rate is 50 cents per 1,000 feet on domestic rates, effective on gas consumed during the month of December. The new rate is temporary pending final hearing on January 20.

VALUE OF NATURAL GAS INDUSTRY STRIKINGLY SHOWN IN ONTARIO

By Col. R. B. Harkness
Commissioner of Gas for Ontario

The total amount of natural gas produced in Ontario in 1923 was 8,128,413,000 feet and the retail value of this was $4,066,244. The capital invested in producing, transmitting and distributing natural gas was $25,571,000. No one knows the amount invested in exploration work by companies that are not successful in reaching the production stage and by drilling contractors; it will probably average $150,000 per year at the lowest. The number of wage earners employed in the year was 839 (not including drillers) and the average number 473. The wages paid was $360,863. The salaried employes, i.e., managers, technical employes and clerical staff totaled 84 male and 46 female and their salaries $172,502.

In order to provide for a supply of gas in future, gas companies must hold certain leases in a gas field in reserve to be drilled as necessity directs. Rentals are paid each year to hold this land. These rentals and bonuses paid annually for holding reserve acreage and for each producing gas well amounted to $112,459 in 1923. The total acres held under lease both operated and unoperated was 345,827.

The true value of natural gas or any product is best shown by comparing it with a substitute. For cooking—manufactured gas, electricity, coal and wood; for heating—coal and wood; for industrial purposes—principally electricity and gasoline; although fuel oil would be used in a few cases. Wood and fuel oil have purposedly beenomitted as wood would be used only in country districts where it is plentiful and cheap and fuel oil in a very few large furnaces.

Comparison of the value of natural gas and its substitute:

COMPARISON OF THE VALUE OF NATURAL GAS AND ITS SUBSTITUTE

Natural Gas

Fuel	How Used	Efficiency	Price M. cu.ft.	B. T. U. per cu. ft.	Total Value
Natural gas	Kitchen stove	25%	$ .50	1020	$2,705,054
Natural gas	Furnace	20%	.50	1020	935,018
Natural gas	All industrial purposes	20%	.50	1020	326,152
Total					$4,066,224

Substitute

Fuel	How Used	Efficiency	Price	B. T. U. per Unit	Total Value
Manuf'd gas	Kitchen stove	25%	$ 1.35 M. cu. ft.	500 per cu. ft.	$6,601,328
Coal	House furnace	25%	15.50 per ton	14000 per lb.	1,037,890
Electricity	Kitchen stove	60%	.02 per K.W.H.	3411 K.W.H.	5,265,119
Electricity	Industr'l purposes	80%	.02 K.W.H.	3411 K.W.H.	298,972
Gasoline	Industr'l purposes	25%	.30 gal.	1900 per lb	1,229,123
Total					$14,432,432

For this calculation it was estimated that of the gas used for purposes other than in industries, 25 per cent was used for heating and 75 per cent for cooking. In the substitute fuels the 75 per cent was divided: 60 per cent manufactured gas and 40 per cent electricity. The 25 per cent heating was estimated to be replaced by electricity and 75 per cent by gasoline or other fuel oils.

Another of the many proofs that natural gas is being constantly wasted at low prices, mainly as a result of being used in poorly designed appliances, is the difference in the cost of natural gas and its substitutes, about $10,400,000. This difference must be paid by the consumer and would increase his fuel bill $130 annually making a total yearly bill of $180 per consumer. It will be seen that there is an increase of about $100,000 in the total heating bill and $9,161,393 in the total cooking amount, or $114 per consumer for cooking only. This amount, of course, is ridiculous and goes to show that at least twice as much natural gas is being used for cooking purposes or purposes other than heating and industrial that is necessary.

These calculations are based on the value of natural gas and the different purposes for which it was used in 1923. If too much natural gas is being used, then this excess is reflected in the substitute.

Not considering the cost to municipalities for collecting ashes from furnaces but only the above values, it would cost $14,432,432 to replace natural gas in Ontario, and to do so it would be necessary to import 400,361 tons of coal worth $4,003,410 wholesale, for use direct and for manufacturing gas. Ninety-eight per cent of the gasoline would be imported either as such or as crude oil. Allowing for cost of refining in Canada it would probably add another $400,000 to the imports making a total of $4,099,266 that would be paid to foreign countries for substitutes for natural gas. The loss to municipalities in taxes cannot be overlooked. At 10 mills this would be $255,710 and the loss in wages paid $633,365. The last item would be reduced by a portion of the clerical staff who would still find local employment, but the vast numbers of employes are especially skilled men who would find employment in other natural gas fields. The clerical staff which would not move would be more than balanced by the drillers not included in the total who must seek employment elsewhere.

To sum up: the substitute fuels would cost three and a half times as much as natural gas in 1923; the loss in money exported to pay for coal and oil would be $4,099,266; the loss in rentals $112,459; the loss in taxes and wages $889,075; a total of $5,100,800; finally probably 600 skilled men would have to find employment in other gas fields. The effect of this reaches every branch of society from the lawyers who fight the rate battles to the owners of machine shops where materials are repaired and the merchants who clothe and feed the employes, all of whom help to pay the difference in the price of fuels.

CORRIN IS OPTIMISTIC ON OUTLOOK FOR GAS

By John B. Corbin
President, Natural Gas Association of America, and Vice President, Hope Natural Gas Co.

PITTSBURGH, Pa., Jan. 3.—In the natural gas industry the outlook upon the coming year is optimistic.

True, the peak of production has come and gone, but constant depletion of nature's greatest fuel has brought into action two powerful factors for good.

First, the producer has obeyed the danger signal of natural gas exhaustion and he is now bending every effort to conserve the remaining supply.

Second, the consuming public, at last heeding repeated warnings and coming to a true appreciation of natural gas and its incomparable worth, is learning to use it efficiently and economically.

Thus, teamwork by the producer and the public postpones the ultimate exhaustion of the gas fields and the industry faces the figures 1925, hopefully.

ONTARIO GAS BOARD AWARDS NEW RATES

CHATHAM, Ont., Jan. 3.—The Natural Gas Board of Reference for Ontario has made its award with respect to recent applications of the Southern Ontario Gas Co. for increases in gas rates in various municipalities in southwestern Ontario served by the company.

In Kent County municipalities the new rates are as follows:

For Dover, Raleigh and Tilbury East Townships, the gross rates for the seven winter months are fixed on a step-up basis, with a minimum rate for the first 10,000 feet each month; a higher rate for the next 10,000; and a still higher rate for quantities over 20,000. This plan has been adopted throughout for winter months. For summer months a flat rate is fixed.

For Dover, Raleigh and Tilbury East Townships the winter rates, per 1,000 feet, are, first 10,000 feet, 45c; second 10,000 feet, 50c; over 20,000 feet, 60c. Summer rate, 70 cents.

For Howard and Orford Townships and Highgate and Wheatley, winter rates, 55, 60 and 70 cents; summer rate 80 cents.

All sections of Romney Township not covered by the previous order of March 23,1923, have new rates; winter rate, 45, 50, 60 cents; summer rate, 70 cents. The order of March 23, 1923, is to remain effective for two years more, when the new rates also become effective in the remaining sections of Romney. All these rates are subject to 5 cents discount for prompt payment.

In Elgin County for the seven winter months the new net rates are 50, 55 and 65 cents; summer rate, 75 cents. The new rates here in some cases involve decreases on the minimum consumption. In Aldborough, West Lorne and Rodney the previous flat rate was 50 cents; in Dunwich, Dutton and Wallacetown it was 55 cents, and in Southwold it was 60 cents.

CRUSADER PURCHASES OIL FIELDS GAS LEASES

SHREVEPORT, La., Jan. 3.—Cotton Valley will supply fuel for many ships of the British mercantile marine as the result of the purchase of 660 acres of leases held by the Oil Fields Gas Co. on the Hope estate lands in Sections 13 and 24-21-10 by the Crusader Oil & Pipeline Co. for a price said to be $2,000,000, part cash and part to be paid from the first oil produced.

The Crusader Co., which has been operating in Smackover for the last year, is a subsidiary of the British-Mex Petroleum Co., formed by a number of British steamship lines for the purpose of providing oil fuel.

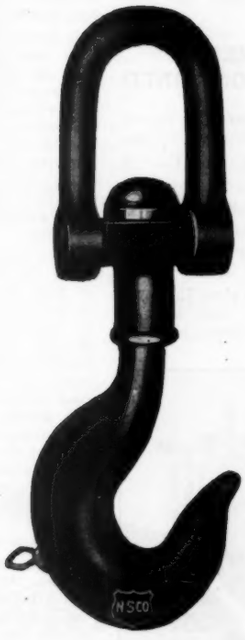
Administrative headquarters of the company, which have been maintained in El Dorado, will be moved to Shreveport, it was stated, although operating headquarters will remain in the Arkansas town with district offices in Cotton Valley. W. R. Davis, general manager of the company, will move to Shreveport and open offices here within a week.

The Cotton Valley acreage is proven on all sides and three wells are under way with a drilling program in contemplation. All wells on the Hope estate leases under way by the Oil Fields Gas Co. at the time of the properties were placed in escrow two weeks ago, are taken over by the Crusader and will be carried on field reports as Crusader Hope Estate instead of Oil Fields Gas Co. Hope Estate.

The Crusader entered the industry in this section with construction and purchase of pipe lines and production in Smackover about a year ago.

NATIONAL STANDARD HOOKS

National Standard Ball Bearing Sucker Rod Hook.



National Standard Double Swivel Plain Bearing Hook.

National Standard Double Swivel Ball Bearing Hook.

DROP-FORGED from high quality STEEL. Uniform strength and perfect balance is assured.

The NATIONAL SUPPLY COMPANIES

EQUIPMENT AND SUPPLIES

STEEL TRADE UNUSUALLY FAVORABLE WITH GOOD OIL COUNTRY PROSPECTS

By B. E. V. Luty

PITTSBURGH, Pa., Jan. 5.—The closing weeks of the old year usually make a dull period in buying of steel, but buying this time has declined only slightly and has maintained a heavier rate than in September or October. December as a month usually witnesses a decrease in mill operations, but this time December production was about 10 per cent above that of November. The period of a few days around January 1 usually represents the placing of routine orders only, such as would not produce any price changes, but there is now to be recorded an advance of $2 a ton in the plate market and an advance in semi-finished steel of $1 a ton, following the $1 a ton advance reported a week ago.

Thus in several respects steel trade conditions appear unusually favorable and the necessary augury is for very good steel business in 1925. So plain are the current indications that the most impressive remark heard in steel circles is expression of a fear that the improvement may be overdone, forcing a reaction in the near future when, if the situation were properly nursed, the steel market could remain in good and strong condition for a long time.

In particular the trade recalls what occurred a year ago, when there was heavy buying, resulting in steel production mounting very rapidly whereupon after March there was a very sharp reaction, steel buyers finding they had taken too much steel and being forced to liquidate.

Situation Good Enough

In other words, the typical feeling among steel producers is that the present situation is good enough and the only danger is of its becoming too good to last.

The plate market is quotable at 2.00 cents f.o.b. mill, Pittsburgh district as minimum. The market did not advance suddenly. Recently it became established at 1.90 cents. Then mills began to quote 1.95 cents and 2.00 cents on the less desirable business until finally it was found possible to maintain 2.00 cents as minimum. Bars remain at 2.10 cents and shapes are also at that figure. Bars are very strong and it looks as if mills could soon bring about an advance to 2.20 cents, say within a month. As plates in the past usually sold at $2 a ton above bars, mills are more interested in getting the plate market up to 2.10 cents than in securing a further advance in bars at this time. One steel producer has already predicted that plates will be at 2.25 cents before long, which of course would mean that bars and shapes would also get up to that level.

The indisposition of mills to make any further sales of semi-finished steel, referred to a week ago, has become still more pronounced. The producers find their own finishing mills will be running well and they do not care to sell billets, slabs and sheet bars except to accommodate regular customers. Prices are not clearly defined, there being so few sales, but the minimum seems to be $38 on billets and slabs and $39 on sheet bars, or $1 advance in the week and $2 advance in two weeks. The declared objective of sheet bar producers is a $40 price, which would conform with sheet prices as recently advanced. The policy in selling sheet bars was to sell only such tonnage at $37 as would cover sheet mills on their sales of sheets at the old prices. These sales average approximately two-thirds of the first quarter production.

Pipe Under Negotiation

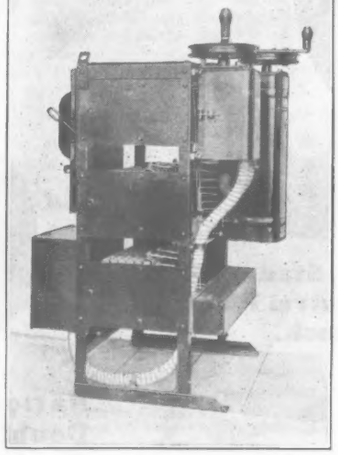
The steel industry operated at about 66 per cent in October, 72 per cent in November and 80 per cent in December. Predictions are made that an 85 to 90 per cent rate will be averaged during the first four to six months of the year. The first four post-war years showed an average between 60 and 65 per cent, and the next two years, 1923 and 1924, an average of 74 per cent, 1923 being slightly the better of the two. Thus any operation above 80 per cent would be rather a high one.

Several large tonnages of line pipe for Texas fields have been under negotiation for several weeks past and it looks as if the pipe mills would soon have a very comfortable backlog in that direction. Other oil country goods promise increasing demand as the season progresses, while merchant pipe demand has continued good right along.

CONTROL EQUIPMENT IS SELF-CONTAINED

A new self-contained controller for oil well motor equipment developed by the Cutler-Hammer Manufacturing Co. of Milwaukee, Wis., is designed for use with the two-speed pole-changing type of wound rotor induction motors which are being used in increasing numbers for pumping and cleaning oil wells.

This device, it is said, gives the operator complete control so that he may start it, run it at low speed, as when



Cutler-Hammer control equipment for use with 30-15 h.p., two-speed Oilwell motor.

pumping, varying this pumping speed, or change over to higher speed (twice the low speed) when pulling, cleaning out or bailing. This speed may also be varied.

The controller is assembled as a complete unit so that it may be easily transported and set up. In addition to operating handles, the two drums have sheave wheels, since pumpers are usually stationed at the headache post on the rig, and operate the motor by means of a cable.

To complete the control equipment there is an enclosed triple-pole fused main line switch with outside operated handle and a protective panel which guards against damage due to overload and unexpected interruption of power supply. The resistance grids which are in circuit when acceclerating the motor or varying the speeds are mounted inside the framework.

PREVENTION OF HEAT LOSSES REQUIRES CONSTANT CONSIDERATION

In the design of refinery equipment and installations, the prevention of unnecessary heat loss is a problem requiring constant consideration. The insulation of towers, dephlegmators, stills and still foundations has been proven to decrease overhead and increase facility in regulation and control, and affects the efficiency of the entire plant. Where fuel is a major item in the cost of operations the question of the relative cost of proper insulation and waste heat assumes vital importance.

In a bulletin on "High Temperature Insulation," published by the Celite Products Co., manufacturers of Sil-O-Cel insulating brick, some valuable data and formulas for determining the rate of heat conduction are given.

Radiation losses, according to this bulletin, rise rapidly with rise in temperature and it is consequently increasingly important to reduce heat losses at the higher temperatures. With petroleum operations carried on in the open, almost unbelievable losses result from rain falling upon heated boilers, steam pipes and stills, and cold winds to which the machinery is exposed also carry away a great amount of heat. The bulletin says in part:

"For some time there was a general belief that since air is a poor conductor of heat, air spaces built into the walls of boilers, furnaces, etc., would prevent or reduce heat loss through the walls. Messrs. Ray and Kreisinger of the United States Bureau of Mines ran a series of exhaustive tests on air spaces used as an insulation and showed that this artifice defeats its own purpose at high temperature because the hot surfaces of the air space radiate so rapidly that a greater amount is lost across the space by radiation than would be conduced were the air space to be filled with material of relatively high conductivity such as fire brick.

In the case of the heat passed by conduction through the solid portion of the wall, the loss remains approximately the same so long as the relative temperatures of the two limiting planes remain constant, no matter what may be the actual temperatures of the two planes. On the other hand, the heat passing across the air space by radiation increases rapidly with the temperature of the enclosing surfaces although the difference between these temperatures may remain constant.

"Since conductivity is responsible for the greater portion of the heat transmitted through a wall, it is in this form of heat transmission that we are particularly interested. The formula for heat flow by conduction follows:

$$H = \frac{c}{d}(T_1 - T_2)$$

Where H is the quantity of heat conducted per unit area, per unit time.

c is the thermal conductivity of the conductor at the mean temperature.

d is the distance between the limiting surfaces of the conductor.

T_1 is the temperature of the hotter part.

T_2 is the temperature of the colder part.

"A good refractory material is essentially strong and dense and is consequently highly conductive. In order to prevent excessive heat loss, a furnace wall must either be built up of great thickness, which is costly, gives an inelastic wall and absorbs a large amount of heat not used in productive work, or be built to include as a component of the wall, a layer of some material of lower thermal conductivity, called the insulator.

"The rate of heat flow through a wall depends upon the resistance of the component materials to the heat waves. Generally speaking, a material having a low apparent density is considered to be a good insulator. Most such materials contain a number of small "voids" or cells containing air. There is danger, however, of having the cells too large and having radiation across the spaces and convection currents within the cells, which increase the apparent conductivity. Roughly speaking, if the cells are large enough to be seen with the naked eye, they are large enough to be instruments of heat transfer by radiation and convection.

"In most cases the substitution of a 4½-inch course of insulating brick for a course of common brick in furnace walls will cut down the loss by from 65 per cent to 70 per cent. The comparison in heat loss between an insulated and an uninsulated furnace wall will be given below, losses being figured by the well known formula for conduction through walls composed of two or more materials of varying conductivities:

$$H = \frac{T_1 - T_2}{\frac{1}{K_1} + \frac{d_1}{c_1} + \frac{d_2}{c_2} + \frac{1}{K_2}}$$

Where H is the total heat lost in B.t.u. per square foot of wall per hour.

T_1 is the temperature of the interior of the furnace.

T_2 is the temperature of the air surrounding the outside of the furnace wall.

K_1 and K_2 are constants for emissivity or surface resistance, K_1 covering difference in temperature between interior of furnace and interior brick wall, and K_2 the difference between the outside wall temperature and the air (for practical purposes $K=2$ in both cases in the formula).

d_1 d_2 etc.=thickness in inches of each course of material divided by c_1 c_2 the conductivity in B.t.u. per inch of thickness of that course.

"Assuming a furnace operating at 1800 degrees Fahrenheit (temperature of air 70 degrees Fahrenheit), with walls constructed of 9-inch fire brick and 8-inch red brick, taking the conductivities of the various components at their approximate mean temperatures and substituting for the formula we have:

$$H = \frac{1800\text{-}70}{\frac{1}{2} + \frac{9}{10} + \frac{8}{6.5} + \frac{1}{2}} = 552 \text{ B.t.u. per square foot per hour.}$$

FIRE BRICK SUGGESTIONS

All users of fire brick will find useful data in a pocket size booklet just issued by the Botfield Refractories Co. of Philadelphia, Pa. It contains a number of fire brick construction suggestions. Among these are the proper method of laying fire brick for thin but firm joints; how to coat furnace walls and other fire brick construction to protect the brick and prolong its life; the method of filling up holes and depressions with an inexpensive patching mixture, saving new construction costs; how to lay up single ring arches, in which any one ring or part of a fire brick can be replaced without removing other rings.

BULLETIN ON GASKETS

A new bulletin describing all kinds of McKim gaskets has been issued by the McCord Radiator & Manufacturing Co. of Detroit, Mich. Pencil drawings and photographs supplement the text in explaining the various uses of the gaskets and their principal characteristics.

AN APPRECIATION

Leidecker Spiral Drilling Tools do reduce Drilling and Producing Expense.

READ HOW

The Midwest Refining Company drilled straight holes in any formation—saved usually one or more strings of casing in every well, LEIDECKER SPIRAL DRILLING TOOLS drill so much better in wet hole or in caving formations, not only saving casing but underreaming expenses as well.

THE MIDWEST REFINING COMPANY

CASPER WYOMING

December 8 1924 .

The Leidecker Tool Company
Marietta, Ohio

Gentlemen.

Replying to your letter of inquiry regarding results obtained from your Spiral Tools. We have used several carloads of Spiral Winged Substitutes and Spirel Bits, drilling straight holes in our slenting formations where it was almost impossible to drill a hole with Standard tools that casing could be run and handled in - saving us greatly in present casing expense and future lifting expense

Will also say these Spiral Tools will drill a full round hole in any formation as quickly as Standard Tools will drill a crooked flat hole

GHJ:M

Yours very truly,

Superintendent of Shops & Tools

Jacques Spiral Substitute Serial No. 729339

Harralson Spiral Bit Serial No. 584917

WHY TAKE THE CHANCE?

LEIDECKER SPIRAL DRILLING TOOLS have proven in hundreds of wells that they drill straight vertical holes—a full round one too—faster than the present standard cable tools—so why take the chance of your casing not following when LEIDECKER SPIRAL TOOLS are absolutely beyond doubt your greatest insurance to protect you whether you be Contractor, Driller or Producer—whenever pipe sticks the Driller is always blamed for not properly dressing bit or running too long. LEIDECKER SPIRAL DRILLING TOOLS have proven there had to be other reasons than the Driller always at fault, because we have yet to hear of any casing not following in holes drilled by these tools.

Wire, Phone or Write for the entire story on an achievement in Drilling Tools.

THE LEIDECKER TOOL COMPANY
Marietta, Ohio

Bartlesville Okla. Basin, Wyoming Casper, Wyoming

LEIDECKER

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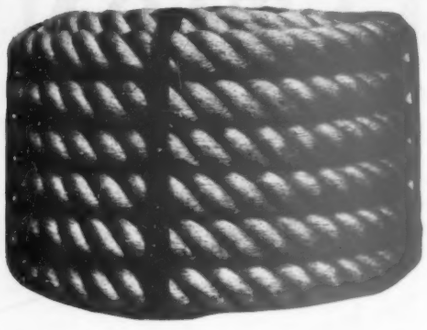


H. & A.
Pure Manila
Bull Rope

The Standard for the Oil Fields

because:

1. Of its construction—100% pure, best wearing, long fibre manila. This insures you against mixtures of low grade fibres.
2. Of its lightness—not weighted down with excessive oil content.
3. Of its unusual serviceability and long life.

Ask the Driller

H. & A. Pure Manila Drilling Cable
specially constructed to retain its life and spring, gives you longer wear and speedier action

H&A Cordage

Agents throughout the oil fields

THE HOOVEN & ALLISON COMPANY
"Spinners of fine cordage since 1869"
Xenia, Ohio

NORTH CENTRAL TEXAS

(Continued from Page 39)

Texas Consolidated Oil Co.'s No. 6 Martin, drilling at 2,685 feet; Walker and others' No. 4 First National Bank, drilling at 360 feet; Buckeye Development Co.'s No. 8 Walker, drilling in shale at 2,880 feet; Critten and others' No. 1 Post, drilling at 1,695 feet; Hart Oil Corp.'s No. 6 Hart, setting casing at 3,450 feet; Knox and others' No. 1 Flournoy, fishing at 3,840 feet; Landreth Production Co.'s No. 1 Ward, drilling at 2,000 feet; Lewis Oil Co.'s No. 1 Brown, drilling in black lime at 3,720 feet; Magnolia Petroleum Co.'s No. 7 J. W. Brown, fishing at 3,220 feet; same company's No. 8 J. W. Brown, drilling at 3,100 feet; same company's No. 5 McCauley, drilling at 3,715 feet; Sims Oil Co.'s No. 6 Jackson, underreaming; States Oil Corp.'s No. 1 Boles, gas showing at 3,675 feet; Sun Oil Co.'s No. 6 Stoke, drilling at 3,190 feet; Texas Pacific Coal & Oil Co.'s No. 44 Binney, drilling at 660 feet; same company's No. 2 Hand, account 2, drilling at 460 feet; same company's No. 1 Veale, cleaning out at 3,690 feet; Thompson and others' No. 2 Williams, drilling at 390 feet.

Eby and others' No. 6 Miller, drilling at 870 feet; Gallagher and others' No. 1 Goodwin, drilling at 1,210 feet; Magnolia Petroleum Co.'s No. 2 Gulf-Carruth, drilling at 2,800 feet; same company's No. 7 Harris, drilling at 425 feet; Reclamation Oil Co.'s No. 6 Bond, fishing at 2,195 feet; States Oil Corp.'s No. 3 Davenport, drilling at 900 feet; same company's No. 14 Harrell, drilling at 820 feet; Burkett and others' No. 1 Stanton, drilling at 1,000 feet; Eastland Oil Co.'s No. 1 Hazel, drilling at 350 feet; same company's No. 1 Jordan, drilling at 3,160 feet; Ladd and others' No. 1 Owens, drilling at 1,805 feet; Weaver Oil Corp.'s No. 1 Dulin, drilling at 1,905 feet.

PRODUCTION REPORT
Week Ending January 1, 1925

Burkburnett		
Barkley & Meadows	560	
Humble Oil & Refining Co.	480	
Gulf Production Co.	625	
Magnolia Petroleum Co.	2,705	
McMan Oil Co.	300	
Panhandle Refining Co.	315	
Prairie Oil & Gas Co.	35	
Sinclair Oil & Gas Co.	50	
The Texas Co.	510	
Texhoma Oil & Refining Co.	370	
Miscellaneous	8,325	
Total		12,275
Electra		
Empire Gas & Fuel Co.	1,125	
Humble Oil & Refining Co.	160	
Griswold Oil Co.	250	
Gulf Production Co.	895	
Magnolia Petroleum Co.	3,990	
McMan Oil Co.	175	
Panhandle Refining Co.	60	
The Texas Co.	3,835	
Texhoma Oil & Refining Co.	1,895	
Miscellaneous	4,610	
Total		16,995
Iowa Park		
Griswold Oil Co.	65	
Gulf Production Co.	35	
Humble Oil & Refining Co.	10	
Magnolia Petroleum Co.	470	
Panhandle Refining Co.	60	
Texhoma Oil & Refining Co.	30	
Miscellaneous	2,450	
Archer County		
Empire Gas & Fuel Co.	620	
Griswold Oil Co.	350	
Gulf Production Co.	2,180	
Humble Oil & Refining Co.	515	
Magnolia Petroleum Co.	540	
Panhandle Refining Co.	3,080	
Prairie Oil & Gas Co.	815	
The Texas Co.	600	
Texhoma Oil & Refining Co.	2,485	
Miscellaneous	22,485	
Petrolia		
Gulf Production Co.	35	
Magnolia Petroleum Co.	20	
The Texas Co.	60	
Miscellaneous	185	
Total		37,090
Stephens County		
Empire Gas & Fuel Co.	80	
Gulf Production Co.	1,265	
Humble Oil & Refing Co.	980	
Magnolia Petroleum Co.	650	
Mid-Kansas Oil & Gas Co.	1,920	
Prairie Oil & Gas Co.	945	
Sinclair Oil & Gas Co.	100	
Sun Oil Co.	280	
The Texas Co.	1,870	
Texas Pacific Coal & Oil Co.	945	
Miscellaneous	6,695	
Total		15,730
Eastland County		
Gulf Production Co	385	
Humble Oil & Refining Co.	85	
Magnolia Petroleum Co.	550	
Mid-Kansas Oil & Gas Co.	175	
Panhandle Refining Co.	320	
Prairie Oil & Gas Co.	640	
Sinclair Oil & Gas Co.	420	
TheTexas Co.	235	
Texas Pacific Coal & Oil Co.	950	
Miscellaneous	2,890	
Total		6,650
Other Fields		
Strawn—		
Texas & Pacific Coal & Oil Co.	220	
Miscellaneous	455	
Marun—		
Empire Gas & Fuel Co.	55	
Humble Oil & Refining Co.	340	
The Texas Co.	140	
Texhoma Oil & Refining Co.	140	
Miscellaneous	1,840	
Coleman County—		
Miscellaneous	70	
Brown County—		
Miscellaeous	860	
Comanche-Eastland		
Humble Oil & Refining Co.	205	
Magnolia Petroleum Co.	1,200	
Mid-Kansas Oil & Gas Co.	370	
Sinclair Oil & Gas Co.	40	
The Texas Co.	190	
Texas Pacific Coal & Oil Co.	140	
Miscellaneous	2,286	
Young County—		
Gulf Production Co.	95	
Sinclair Oil & Gas Co.	425	
Panhandle Refining Co.	130	
The Texas Co.	25	
Miscellaneous	2,925	
Mitchell County	1,530	
Reagan County	8,945	
Jack County	25	
Scurry County	45	
Carson County	840	
Hutchinson County	135	
Callahan County	1,545	
Wilbarger County	5,860	
Total		31,075
Total this week		119,315
Total last week		134,690
Loss		14,375

Wildcats Drilling

Hutchinson County: Tex-O-Oil Co.'s No. 1 Johnson, gas showing at 1,165 feet; Western Enterprise Oil & Gas Co.'s No. 1 Smith, spraying salt water at 2,860 feet; Wilson and others' No. 1 Whittenburg, oil showing at 2,905 feet.

Carson County: American Refining Co.'s No. 2 Burnett, drilling at 2,954 feet; Marland Oil Co.'s No. 1 Burnett, drilling a broken lime at 2,785 feet; Silk and others' No. 3-A Burnett, standardizing at 3,000 feet; Skelly Oil Co.'s No. 2 Burnett, gas showing at 2,305 feet; The Texas Co.'s No. 5 Burnett, drilling at 1,090 feet.

Gray County: Wilcox Oil & Gas Co.'s No. 1 Wilson, resumed drilling at 3,115 feet.

Wilbarger County: Bridwell and others' No. 2 Dill, drilling at 965 feet; South Vernon Oil Co.'s No. 4 Stephens, cleaning out at 1,950 feet; The Texas Co.'s No. 1 Castlebury, drilling at 565 feet.

Baylor County: Magnolia Petroleum Co.'s No. 2 Portwood putting on pump at 1,410 feet.

Clay County: Cumley and others' No. 2 Stine, underreaming. Lone Star Gas Co.'s No. 21 Martin, underreaming.

Shackelford County: Magnolia Petroleum Co.'s No. 4 George, drilling in gray lime at 3,510 feet; Phillips Petroleum Co.'s No. 3 Lynch, drilling at 3,175 feet.

Palo Pinto County: Britton and others' No. 3 Strawn Coal Co., drilling at 3,110 feet; Cameron and others' No. 2 Pollard, drilling at 720 feet; Hart and others' No. 1 Smith, drilling at 630 feet; Little Caddo Syndicate's No. 1 Fitzgerald, drilling at 830 feet; same company's No. 2 Massie, drilling at 900 feet; Phillips and others' No. 1 Caudill, cleaning out at 3,555 feet.

Callahan County: Dutton and others' No. 5 Catchey, drilling at 1,400 feet; O'Donnell and others' No. 1 Cathey, drilling at 1,300 feet; Prewitt and others' No. 2 George T. Crane, drilling at 1,005 feet.

Mitchell County: California Co.'s No. 1 Clark, oil showing at 3,065 feet; same company's No. 1 Miller, cleaning out at 3,015 feet; Burns and others' No. 4 Fee, slight showing of oil at 4,700 feet.

Coleman County: Roth and others' No. 9 Overall, drilling at 1,180 feet.

Brown County: Calvert Brothers' No. 1 Prater, spudding; Canyon Oil & Gas Co.'s No. 1 Elsberry, drilling at 1,200 feet; Davis and others' No. 2 Newton, drilling at 1,100 feet; Mahlstedt Mook Oil Co.'s No. 3 Newton, drilling at 1,205 feet; Williams and others' No. 1 Newton, drilling at 490 feet.

Irion County: Orient Oil Co.'s No. 1 Suggs, drilling at 1,100 feet; Virginia Texas Petroleum Co.'s No. 1 Noelke, drilling at 990 feet.

Reagan County: Cogwell and others' No. 1 University, rig burned; Grayson and others' No. 1 University, drilling at 940 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Hughes and others' drilling at 2,885 feet; Texon Land & Development Co.'s No. 3 Group 2 University, underreaming.

ROOTS

Three Units in Service— Two Units On the Way

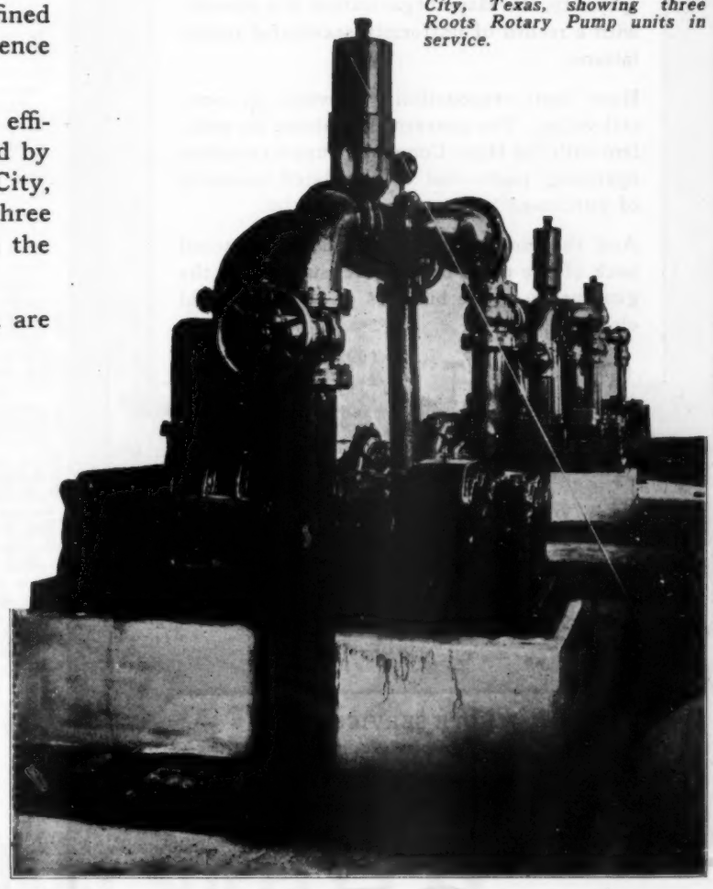
Roots Rotary Pumps are particularly adapted to pumping gasoline because they require no internal lubrication. The only wearing parts are the bearings and their average life is from five to ten years and frequently much longer.

Roots Rotary Pumps handle tar, crude and refined oils with the same low operating cost and absence of repairs.

The ability of Roots Pumps to handle gasoline efficiently and economically is quickly demonstrated by the fact that the Marland Refining Co., Texas City, Texas, is ordering two more units to add to the three units now in service. Complete information on the work of these units will be sent on request.

More than 50% of orders received by Roots Co. are repeat orders.

Installations at the plant of the Marland Refining Co., Texas City, Texas, showing three Roots Rotary Pump units in service.



These bulletins are the keys to low cost pumping service:

107-108 Roots Rotary Gas Pumps for still vapor recovery, pumping natural gas to compressors, etc.

111 Roots Positive Displacement Gas Meters.

113 Roots Rotary Pumps, the only successful pump for gasoline, tar, crude, refined, and heavy oils.

114 Roots Rotary Vacuum Pumps.

118 Engineering Tables.

101-102 Roots Rotary Blowers for oil and gas burners and agitating oils.

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Peoples Gas Building

CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

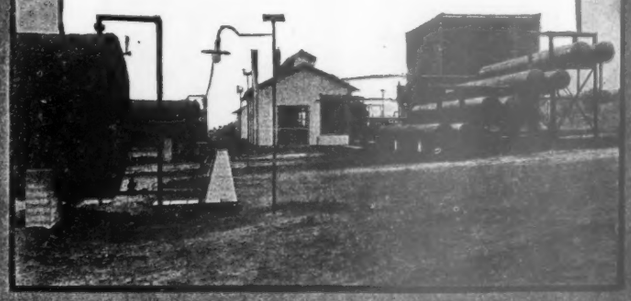
ENGINEERS & CONTRACTORS
IN NATURAL GAS AND OIL

GASOLINE EXTRACTION PLANTS
with a PLUS Value

The design and construction of gasoline recovery plants is only one of the many activities included in Hope Service. And in this specialty, the Hope organization is a pioneer, with a record of uniformly successful installations.

Here "unit responsibility" reveals an especial value. The concern that places its problem with the Hope Company, buys a complete operating plant—not an unrelated assembly of purchased apparatus and material.

And the Hope reputation and record stand back of the plant as a whole, supporting the guarantees of the builders of the individual elements in it.



HOPE SERVICE

Engineering counsel, design, construction and contracting—in pipe lines for oil and gas, oil pumping stations, gas compressing and boosting plants, gasoline recovery systems, city and inter-city gas mains.

UNIT RESPONSIBILITY

H-2-A

ENGINEERS CONTRACTORS HOPE Engineering & Supply COMPANY DESIGNERS MANUFACTURERS
MT. VERNON, OHIO, U. S. A.

Kevin-Sunburst Area Has Some Peculiar Geological Features

SHELBY, Mont., Jan. 3.—F. C. Platt of the Northern Oil Information Bureau in discussing some of the peculiarities of the Kevin-Sunburst Field, which at the close of the year had 215 oil wells; 16 producing gas wells; 107 dry holes on structure and 25 dry holes off structure and which completed 137 wells last year of which 84 were oil wells and 44 dry or sulphur water holes, says: "The large area which the field covers cannot naturally be expected to be entirely productive, and as the Colorado shale erodes easily there are very few outcrops and concretionary beds exposed from which are very productive. The dry worked, so that to date wells have been drilled wherever companies have acquired acreage that they thought worth a test. This has resulted in a large number of dry holes, together with a great many producing wells, and has opened up several new pools this year which are very productive. Thed ry holes have helped define the producing areas, and in the future the percentage of dry holes to oil wells will be greatly reduced, though this will take a great deal more drilling and, of course, a lot more dry holes, for the simple reason that there are, without doubt several more large pools, such as the Ohio, Baker, Bitter Creek, Shoshone, Queen City Pools that have never been discovered; contained in the Kevin-Sunburst structure, which can only be found by drilling.

"Aother reason for the dry holes lies in the fact that the Ellis sand is very irregular in nature, due to the fact that the Ellis formation lies unconformably upon the Madison, and there appears to be no doubt that the top of the Madison formation in this structure is composed of hills and valleys, the valleys being filled or at least partly filled with talus from the erosion of the hills. This talus, which is called the Ellis sand, being simply weathered lime and possibly some secondary quartz, the size of the grains depending upon the distance down from the totp of the hill the drill happens to hit the sand. Should the drill happen to hit the top of the hills where no talus could accumulate it would go directly from the black lime at the base of thi Ellis formation into the top of the Madi son lime, resulting in a dry hole because there would be no sand, or at least not enough porosity in what broken up lime would be there to act as a reservoir for the oil.

"The above explanation does not account for the accumulation of the oil in this structure nor for the fact that offset wells vary in initial production to such a great extent, as this is an entirely different matter on which there is considerable difference of opinion, and which, in the writer's opinion, has never been satisfactorily determined."

CANADIAN FIELDS

(Continued from Page 46)

ning double tower, had to discontinue work entirely owing to the water freezing. British Petroleums' No. 2, which was cleaned out just before the cold spell, seems to have come back to practically its original production as a flowing well. When tubed it is thought the well may make 200 bbls. a day, flowing by heads; at present it is shut in, until weather conditions improve. It is reported that the company has contracted to deliver 10,000 bbls. of its heavy crude to the Great West Refining Co., Ltd. The company will build a small plant at Wainwright to treat the asphaltic crude; deliveries are to be made by tank cars until the spring, when a 6-mile line will be laid to the wells. Some production, to an amount not yet determined, is available from Nos. 2 and 4 wells.

Lethbridge Gas Decision

The Alberta Board of Public Utlities, sitting at Calgary, has given its decision on the application of the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary for increased rates for the city of Lethbridge and the towns of Macleod, Granum, Claresholm, Nanton and Okotoks. Litigation between the company and the city has been in progress for over a year; the public utilities board originally declining to fix rates until an appeal to the Supreme Court of Alberta had determined that it had jurisdiction to do so.

Some time ago a rate increase was granted for Calgary, the board fixing a rate of 53 cents with a 5 cent discount for prompt payment, making a 48 cent net rate. The city of Lethbridge, however, claimed that under its franchise agreement which did not expire until July 30, 1927, it was entitled to a fixed rate of 35 cents. The board in its decision holds that the company sells 80 per cent of its production to Calgary; that had it not been for the increased rates at Calgary the company would not have been able to carry on; and that it would be inequitable for Lethbridge to continue the enjoyment of the service at a rate found inadequate for Calgary. The Calgary rate of 53 cents gross and 48 cents net is therefore fixed for Lethbridge and the five towns under consideration, the new rate becoming effective January 1, 1925, and continuing to November 1, 1926.

Ontario Gas Legislation

At the forthcoming session of the Ontario Legislature it is expected that further legislation with respect to the natural gas industry will be enacted. Recently a deputation representing the city of Windsor and other municipalities in southwestern Ontario made strong representations to Premier Ferguson urging the dismissal of the Natural Gas Board of Reference and drastic changes in the existing legislation. The Government takes the stand that some very good reasons must be presented to justify the dismissal of the board; and that the reasons presented are insufficient to justify such a step. Accordingly, the present board will be retained.

The new legislation will, however, provide for an appeal to the higher courts from the decision of the rate-fixing board, not merely on questions of law and jurisdiction, but also in regard to the rates actually fixed by the board.

Canadian Western Natural Gas, Heat, Light & Power Co. of Calgary reports gross earnings for October, 1924, at approximately $76,052, compared with $59,028 for the corresponding month of 1923.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended December 27 totaled 530,000 bbls., a daily average of 75,714 bbls., against 598,000 bbls., a daily average of 85,429 bbls. for the week ended December 20.

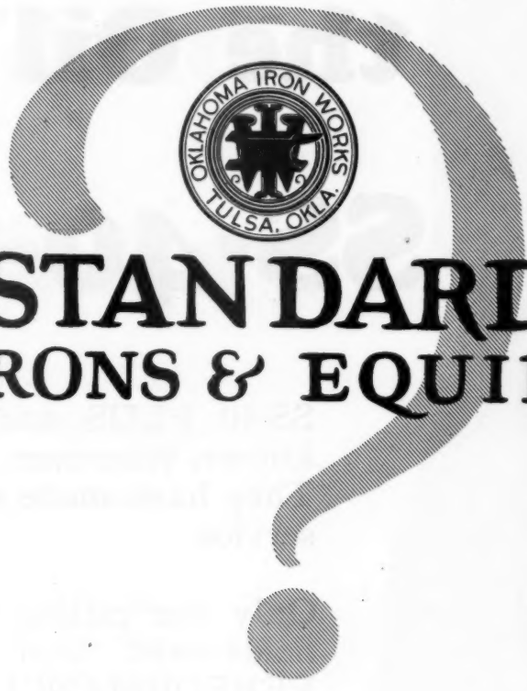
At Atlatnic Coast Ports—	
New York	318,000
Philadelphia	212,000
Total	530,000
Daily average	75,714
Total Atlantic and Gulf Coast Ports	530,000
Daily average	75,714

Imports of petroleum (crude and refined oils) at the principal ports for the week ended December 27 totaled 1,576,000 bbls. a daily average of 225,143 bbls. compared with 1,070,000 bbls., a daily average of 152,857 bbls. for the week ended December 20.

At Atlantic Coast Ports—	
Baltimore	171,000
Boston	113,000
New York	183,000
Philadelphia	96,000
Others	403,000
Total	967,000
Daily average	138,143
At Gulf Coast Ports—	
Galveston district	270,000
New Orleans and Baton Rouge	339,000
Total	609,000
Daily average	87,000
At All U. S. Ports—	
Total	1,576,000
Daily average	225,143

AN EPITAPH

Our late chauffeur he was a Yank,
Called petrol "gasoline,"
He struck a match upon a tank,
Since then he's not "benzene."
—Oil and Colour Trades Journal, London.



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RIG IRONS & EQUIPMENT

Yes! we have them—and hundreds of other quality lines for the oil field on which we are ready to give you real

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just tell us your needs

INTERNATIONAL SUPPLY CO.

Branch stores in 23 of the leading oil field towns in Oklahoma, Kansas, Wyoming, Colorado and Texas.

General Offices and Works
Tulsa, Okla.
District Offices: Denver, Colo., Fort Worth, Texas and El Dorado, Kans.

They Have Been W
the Oil Fields f

SS-40+

SS-40 PLUS and SS-124 PLUS are known wherever hard drilling is done. They have made new records for chain service.

Only one calling card goes in the oil fields—and that bears the label of PERFORMANCE.

These chains of ruggedness-plus were well known in the designing rooms, laboratories and plants of Link-Belt, long before they had been tried out in the field.

They had won the double >—< arrow —Link-Belt's chain mark of quality.

Their super strength is a tested fact.

This is the Link-Belt Chain >—< Ma

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SS 40+ LINK-BELT S

Welcomed by the World

SS-124+

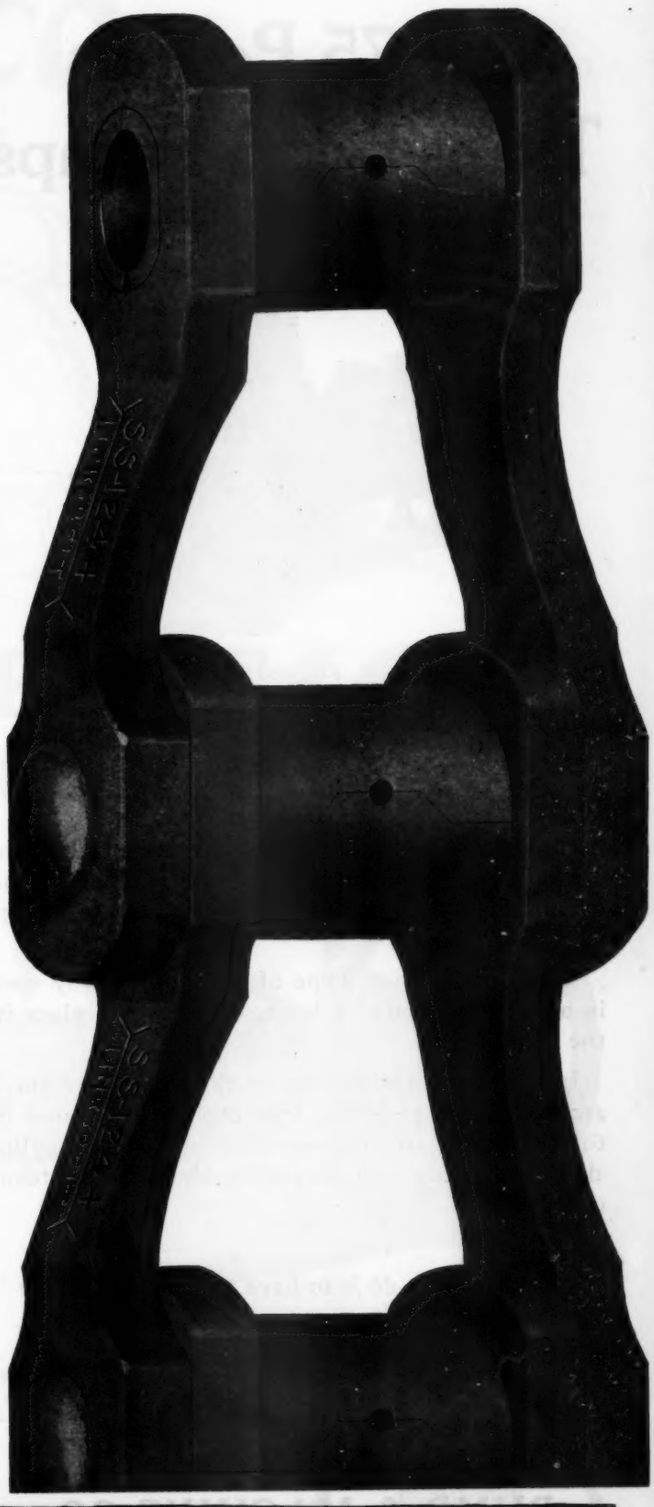
Drillers—you can now specify a chain *for the highest speeds ever marked in drilling;* a light chain for your engine drive.

SS-40 PLUS is *no heavier* than its famous predecessor, SS-40; and SS-124 PLUS no heavier than SS-124. **Here** you have a combination for *economy-plus.*

Claims are easy to publish—but this is a fact—SS-40 PLUS is 60% stronger than SS-40, and SS-124 PLUS is 35% stronger than SS-124.

SS-40 PLUS and SS-124 PLUS are now available to every driller.

Look for it on every link



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Power Transmission Chains

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SPROCKET CHAIN SS 124+

For 75 Pounds Transit Low Service Pumps

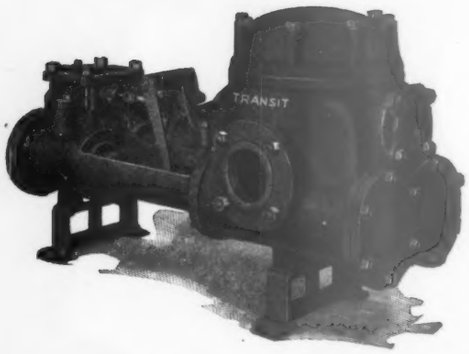


Fig. 1093
6x6x6" TRANSIT Low Service Pump for 75 lbs. working pressure.

High pressure pumps are also relatively high in price. When used on low pressure work, both the investment and the steam consumption are unnecessarily high.

Our Low Service Type of pump has many uses in a refinery, around a lease, or most any place in the oil industry.

In any service where the working pressure stays around 75 lbs. or lower, true economy is found in this type. Relatively large fluid pistons and cylinders deliver large volumes of liquids with low steam consumption.

A good way to do is to have one of our District Office men check over your installation. Perhaps he can help lower your pumping costs.

NATIONAL TRANSIT PUMP & MACHINE CO.

OIL CITY, PA.

District Offices: New York Philadelphia Pittsburgh Cleveland Tulsa Houston Denver

STATISTICS OF CRUDE PETROLEUM FOR NOVEMBER, 1924

(Preliminary data, subject to revision, based on reports received up to December 31, issued by the Department of the Interior, through the Geological Survey.)

During November daily average production of petroleum, measured by the quantity transported from producing properties (amounting to 1,876,967 bbls.), decreased 56,484 bbls. Daily average imports (amounting to 221,633 bbls.), increased 64,440 bbls. Daily average exports (amounting to 48,466 bbls.), increased 2,563 bbls. Daily average indicated deliveries to consumers (amounting to the record high figures of 2,140,667 bbls.) increased 53,151 bbls. The net result of the month's operations being a decrease of pipe line and tank farm stocks of 2,716,000 bbls., the greatest decrease in those stocks which has been reported for any month since August, 1919.

An estimate of production for the year 1924, allowing for increased output in December, indicates that approximately 710,000,000 barrels will be transported from producing properties, and allowing 7,000,000 for fuel consumed and changes in producers' stocks, a total of approximately 717,000,000 barrels is indicated, a decrease of 15,000,000 barrels, or 2 per cent, compared with 1923. This is the first decrease in annual production since 1906.

PRODUCTION

The figures given below for 1924 for the States east of California, compiled from reports made to the Geological Survey by companies that operate gathering lines, are preliminary and show the quantity of petroleum transported from producing properties. Petroleum consumed on the leases and produced but not transported from the producing properties, ranging for the past few years between 4,000,000 and 9,000,000 barrels annually, is not included in the preliminary figures. These items are given in the final statistics, which show all the oil brought to the surface. Current figures for California are those reported by the Pacific Coast office of the American Petroleum Institute. Final figures for California are compiled by the California State Mining Bureau. Data for 1923 are final and include oil consumed on the leases and net increase of producers' stocks.

By States

(Barrels of 42 United States gallons)

State—	*October, 1924 Total	*October, 1924 Daily average	November, 1924 Total	November, 1924 Daily average	Jan.-Nov. 1924	Jan.-Nov. 1923
Arkansas	3,760,000	121,290	3,340,000	111,333	41,165,000	33,800,000
California	18,697,000	603,115	17,767,000	592,234	211,269,000	241,004,000
Colorado	64,000	2,064	64,000	2,133	349,300	79,500
Illinois	708,000	22,839	621,000	20,700	7,452,000	8,022,000
Indiana—						
Southwestern	57,000	1,839	49,000	1,633	618,000	734,000
Northeastern	22,000	710	16,000	533	252,000	230,000
Total Indiana	79,000	2,549	65,000	2,166	870,000	964,000
Kansas	2,584,000	83,355	2,379,000	79,300	26,244,000	25,916,000
Kentucky	636,600	20,536	566,700	18,890	6,839,300	7,429,700
Louisiana—						
Gulf Coast	262,000	8,451	224,000	7,467	2,170,000	2,256,000
Rest of State	1,552,000	50,064	1,507,000	50,233	16,899,000	20,889,000
Total Louisiana	1,814,000	58,515	1,731,000	57,700	19,069,000	23,145,000
Montana	275,000	8,871	240,000	8,000	2,560,000	2,604,000
New Mexico	18,000	581	15,000	500	72,000	.....
New York	122,000	3,935	108,000	3,600	1,246,000	1,138,000
Ohio—						
Cetral and Eastern	441,000	14,226	387,000	12,900	4,393,000	4,631,000
Northwestern	180,000	5,806	142,000	4,734	1,876,000	1,985,000
Total Ohio	621,000	20,032	529,000	17,634	6,269,000	6,516,000
Oklahoma—						
Osage County	3,883,000	125,258	2,977,000	99,234	36,176,000	35,461,000
Rest of States	11,686,000	376,982	12,236,000	407,866	119,900,000	113,233,000
Total Oklahoma	15,569,000	502,240	15,213,000	507,100	156,076,000	148,694,000
Pennsylvania	699,000	22,548	571,000	19,033	6,945,000	7,004,000
Tennessee	400	13	300	10	5,700	7,300
Texas—						
Gulf Coast	2,255,000	72,742	2,042,000	68,066	23,369,000	28,562,000
Rest of State	8,751,000	282,290	8,266,000	275,534	98,068,000	91,570,000
Total Texas	11,006,000	355,032	10,308,000	343,600	121,437,000	120,132,000
West Virginia	541,000	17,452	441,000	14,700	5,461,000	5,864,000
Wyoming—						
Salt Creek	2,043,000	65,903	1,715,000	57,167	29,546,000	32,313,000
Rest of State	700,000	22,581	635,000	21,167	7,784,700	8,212,500
Total Wyoming	2,743,000	88,484	2,350,000	78,334	37,330,700	40,525,500
	59,937,000	1,933,451	56,309,000	1,876,967	650,660,000	672,845,000
By Fields—						
Appalachian	2,440,000	78,710	2,074,000	69,133	24,890,000	25,974,000
Lima-Indiana	202,000	6,516	158,000	5,267	2,128,000	2,215,000
Illinois and SW. Indiana	765,000	24,678	670,000	22,333	8,070,000	8,756,000
Mid-Continent	32,216,000	1,039,239	30,705,000	1,023,500	338,452,000	320,869,000
Gulf Coast	2,517,000	81,193	2,266,000	75,533	25,539,000	30,818,000
Rocky Mountain	3,100,000	100,000	2,669,000	88,967	40,312,000	43,209,000
California	18,697,000	603,115	17,767,000	592,234	211,269,000	241,004,000
	59,937,000	1,933,451	56,309,000	1,876,967	650,660,000	672,845,000

*Revised.

STOCKS

Stocks of crude petroleum for statistical purposes are classified as follows:

1. Producers' stocks—Petroleum held on the producing properties (lease or "field" storage). Producers' stocks are reported to the Geological Survey annually and are included in the Survey's final statistics. Since 1919 producers' stocks east of California have ranged between 3,500,000 and 10,000,000 barrels.

2. Pipe line and tank farm stocks—Petroleum that has been transported from the producing properties but not delivered at refineries or at other points of consumption and is held on tank farms, in tanks along pipe lines, and in the lines. For the States east of California such stocks are reported monthly to the Geological Survey as gross stocks, including the total contents of tanks and pipe lines, and as net stocks, which are gross stocks minus sediment and water. The stocks reported for California are compiled by the Pacific Coast office of the American Petroleum Institute and include producers', pipe line and tank farm stocks (but not refinery stocks) of crude oil, residuum and tops.

3. Refinery and others consumers' stocks—Petroleum that has been delivered at refineries and at other points of consumption. Stocks of crude petroleum held at refineries are compiled by the Bureau of Mines. Data concerning stocks held by other consumers are not available.

Pipe Line and Tank Farm Stocks of Crude Petroleum on Last Day of Month (Barrels.)

Stocks of domestic petroleum are reported by field of origin, not by location of storage. Domestic petroleum east of California—Gross and net pipe line and tank farm stocks:

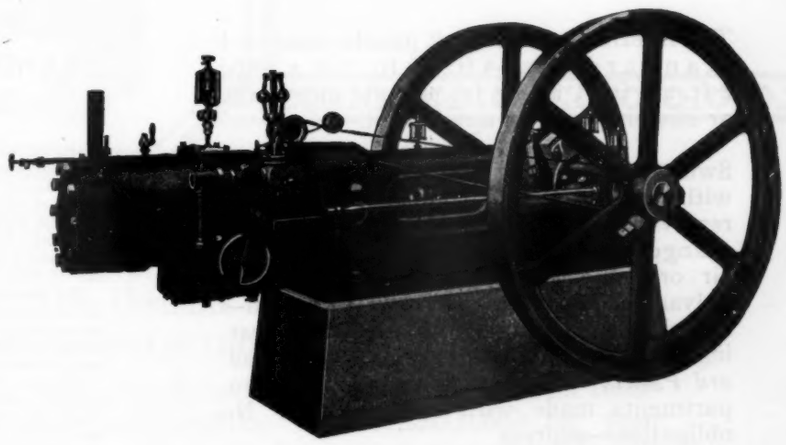
		October 31 1924	Nov. 30 1924	Nov. 30 1923
Appalachian—				
New York, Pennsylvania, West Virginia, Eastern and Central Ohio	Gross	7,190,000	7,149,000	6,560,000
	Net	6,930,000	6,898,000	6,284,000
Kentucky	Gross	2,534,000	2,521,000	3,074,000
	Net	2,406,000	2,398,000	2,945,000
Lima-Indiana	Gross	1,495,000	1,461,000	1,166,000
	Net	1,280,000	1,246,000	930,000
Illinois-Southwest Indiana	Gross	11,762,000	11,562,000	11,905,000
	Net	11,231,000	11,031,000	11,459,000
Mid-Continent—				
Oklahoma, Kansas, Central and North Texas	Gross	192,763,000	191,239,000	182,928,000
	Net	181,663,000	180,245,000	171,836,000
Northern Louisiana and Arkansas	Gross	37,843,000	36,691,000	31,762,000
	Net	35,709,000	34,657,000	29,101,000
Gulf Coast	Gross	21,535,000	21,106,000	25,977,000
	Net	21,128,000	20,723,000	24,726,000
Rocky Mountain	Gross	29,224,000	28,960,000	17,987,000
	Net	29,201,000	28,937,000	17,977,000
Total pipe line and tank farm stocks east of California	Gross	304,346,000	300,689,000	280,459,000
	Net	289,548,000	286,135,000	265,258,000
California (as stated above)		68,640,000	69,226,000	63,438,000
Foreign crude petroleum and topped oil topped in Mexico held in the United States by importers elsewhere than at refineries—At Atlantic Coast stations—Crude petroleum		197,000	179,000	318,000

If Mother Hubbard had used a *TICO*

TITUSVILLE "*TICO*" GAS ENGINES

Her cupboard, most certainly, would not have been bare. The Tico two-cycle gas engine will put oil into the tanks (the oil man's cupboard) as long as there is any oil in the ground. And you will be surprised at the low cost of Tico upkeep. It is the most powerful and efficient engine on the market for its rated horse power.

The new Tico Reversible Clutch—with a 19″ pulley face, machine cut steel gears and hardened pinions, meets the demands of the deep hole pumper. For swabbing or pulling rods and tubing it has the flexibility of steam. Ask any user.



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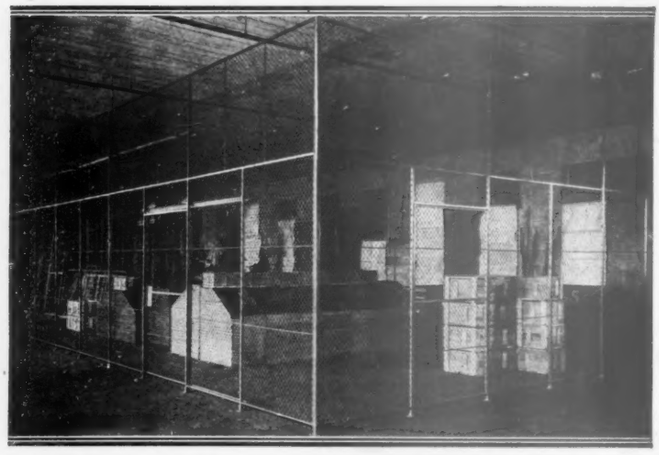

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PAGE
PROTECTION FENCE

Topped oil topped in Mexico	3,127,000	3,218,000	2,604,000
At Gulf Coast Stations—Crude petroleum	461,000	572,000	789,000
Topped oil topped in Mexico	401,000	528,000	495,000
	4,186,000	4,297,000	4,396,000
Total domestic net pipe line and tank farm stocks east of California; producers, pipe line, and tank farm stocks in California; and stocks of foreign crude petroleum held in the United States by importers elsewhere than at refineries	362,374,000	359,658,000	332,887,000

Stocks of Crude Oil at Refineries in United States (Barrels)
(Bureau of Mines)

	September 30, 1924	October 31, 1924	October 31, 1923
Domestic	37,791,385	37,634,437	29,995,427
Foreign	3,757,415	2,684,754	3,673,731
Total crude oil	41,548,800	40,319,191	33,669,158

Imports and Exports of Crude Petroleum (Barrels)
(From Bureau of Foreign and Domestic Commerce)

	October, 1924 Total	October, 1924 Daily average	November, 1924 Total	November, 1924 Daily average	Jan.-Nov. 1924	Jan.-Nov. 1923
*Imports—						
From Mexico	4,596,000	148,258	6,373,000	212,433	67,922,000	71,242,000
From other countries	277,000	8,935	276,000	9,200	4,073,000	2,256,000
Total	4,873,000	157,193	6,649,000	221,633	71,995,000	73,498,000
Exports—Domestic crude oil—						
To Canada	887,000	28,613	910,000	30,333	10,371,000	7,836,000
To other countries	510,000	16,451	526,000	17,533	6,109,000	7,156,000
Foreign crude oil	26,000	839	18,000	600	389,000	290,000
Total	1,423,000	45,903	1,454,000	48,466	16,869,000	15,282,000
Excess impts over expts	3,450,000	111,290	5,195,000	173,167	55,126,000	58,216,000

*Including some topped oil.

Indicated Deliveries of Domestic and Foreign Crude Petroleum to Domestic Consumers, Bbls.

Based on formula—Indicated deliveries equal production plus imports minus exports plus stocks (exclusive of consumers' stocks) at beginning of month minus stocks at end of month.

Domestic petroleum by fields of origin—	*October 1924 Total	*October 1924 Daily average	*November 1924 Total	*November 1924 Daily average	Jan.-Nov. 1924	Jan.-Nov. 1923
Appalachian	2,261,000	72,935	2,114,000	70,467	24,804,000	25,526,000
Lima-Indiana	176,000	5,677	192,000	6,400	1,857,000	1,981,000
Illinois and SW. Indiana	848,000	27,355	870,000	29,000	8,130,000	7,449,000
Mid-Continent	31,058,000	1,001,871	33,175,000	1,105,833	326,454,000	271,516,000
Gulf Coast	2,672,000	86,194	2,671,000	89,033	28,790,000	30,956,000
Rocky Mountain	3,683,000	118,806	2,933,000	97,767	31,079,000	26,949,000
California	20,161,000	650,355	17,181,000	572,700	204,205,000	226,956,000
Deliveries and exports	60,859,000	1,963,193	59,136,000	1,971,200	625,319,000	591,274,000
Exports of domestic crude	1,397,000	45,064	1,436,000	47,866	16,480,000	14,992,000
Deliveries	59,462,000	1,918,129	57,700,000	1,923,334	608,839,000	576,282,000
Foreign petroleum	5,251,000	169,387	6,520,000	217,333	72,063,000	74,164,000
Deliveries of domestic and foreign petroleum	64,713,000	2,087,516	64,220,000	2,140,667	680,902,000	650,446,000

*Revised.

Days' Supply of Pipe Line and Tank Farm Stocks of Crude Petroleum
(Based on average daily rate for month of deliveries to domestic consumers and exporters)

October 31, 1924	November 30, 1924	November 30, 1923
170	164	160

***Number of Producing Oil Wells Completed**

October, 1924	November, 1924	Jan.-Nov., 1924	Jan.-Nov., 1923
1,060	1,007	13,548	15,295

*For States east of California, from The Oil and Gas Journal; for California, from the American Petroleum Institute.

Shipments of California Oil Through Panama Canal to Eastern Ports in United States
(From the Panama Canal Record)
(Compiled from declarations by masters of vessels reported in tons of 2,240 pounds)

	October, 1924	November, 1924	Jan.-Nov., 1924	Jan.-Nov., 1923
Crude oil—Long tons	336,431	285,836	5,158,155	6,615,116
Barrels (approximately)	2,456,000	2,087,000	37,656,000	47,561,000
Refined products: Long tons	60,836	30,321	607,836	396,470

STANDARD OF INDIANA WINS POINT BEFORE MISSOURI SUPREME COURT

JEFFERSON CITY, Mo., Jan. 3.—In the proceeding brought by Attorney General Barrett of Missouri to oust the Standard Oil Co. of Indiana, the Missouri Supreme Court this week sustained the Standard's motion to strike the Attorney General's reply from the files and gave him 10 days for further pleading.

The Standard's motion stated that the State's reply violated rules of pleading in combining statements of law with allegations of fact and in being indefinite in certain particulars.

Attorney General Barrett announces that he is filing a similar motion now to strike the Standard's answer from the files on the same ground and for the same reasons, stating to the court that the State's reply was patterned after the Standard's answer.

The Attorney General's proceeding is based on the cracking patents. Some 10 years ago, the Standard Oil Co. was convicted of violating the Missouri antitrust laws and was ordered ousted from the State, the ouster, however, being stayed on good behavior. The Attorney General recently filed a motion alleging that the cracking patents violated the conditions of this parole and asking that the ouster be now imposed.

In reply to this motion, the Standard filed an answer which claimed that the restriction clauses of the license contracts had never been enforced, that although in terms they forbade the sale of cracked gasoline in Missouri by the licenses, a number of licenses nevertheless, were selling cracked gasoline regularly in this State.

The Standard also claimed in its answer that the cracking patents, instead of reducing competition, had increased it by increasing the supply. Its answer further said that cracked gasoline was not gasoline at all, although of almost identical chemical composition, but that it was in fact a new product which would not exist except for the cracking process. The answer also recited the Standard's large investment in Missouri and the importance of its business to the best interests of the State.

In the attorney general's reply it was said that none of these points affected the question of the Standard's guilt, that the making of the contracts was in itself a violation of the law regardless of whether the contracts were afterwards enforced. Many of the points in the Standard's answer were said by the attorney general's reply to be of such a character that they could only bear on the question of degree of punishment and not on the question of guilt.

In the new pleading which the attorney general is filing, he states to the court that his reply was informal because the answer of the Standard was informal, and that one was patterned after the other. He says that he thought perhaps the court did not desire to apply strict rules of pleading to a proceeding of this particularity but that since the court's action in striking the reply from the files indicated a desire to adhere to strict rules of pleading, he now asked the court to strike out also the major portion of the Standard's answer. The parts referred to in his new motion includes virtually everything except the Standard's admission that the contracts in question were executed by them.

The case is set for hearing on January 23 and it is likely that all matters of pleading will be decided before then.

2-inch 4 1-2-pound Reading Upset Tubing (10 Thread)

This joint was made up and broken out 14 times

IT WAS then made HAND tight and stood 2500 lb. test pressure without leaking. It was made up home and subjected to a pulling strain of 42 tons. The threads did not strip, and upon breaking out, showed them still fit for tubing service.

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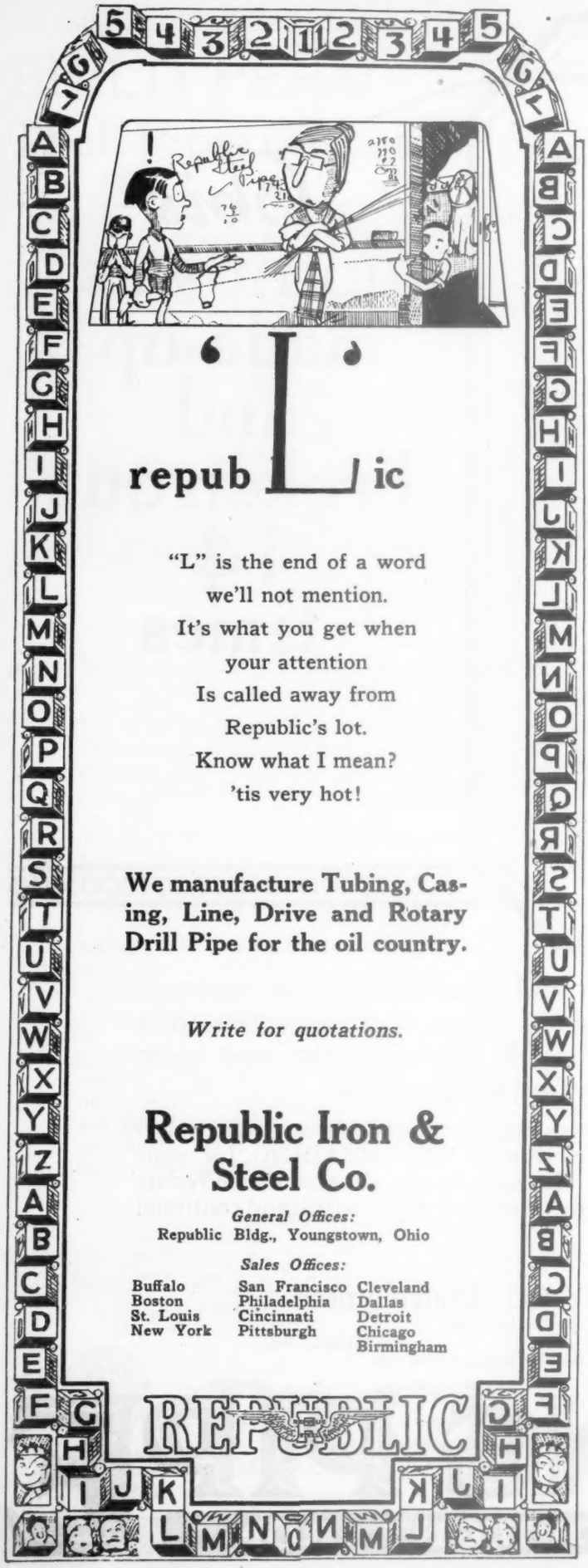

EAST CENTRAL TEXAS

(Continued from Page 39)

ultimate oil production as well as its peak production. However, until the well is definitely known to be a failure, this is merely speculation.

The Pure Oil Co.'s No. 1 Bounds has quit flowing and this is important and about the worst news that has come out of the field as this well was regarded as being very favorably located in the big production zone. It was one of the early completions with an initial output of 4,000 bbls.

Kirby's 8,000-Bbl. Well

Kirby Petroleum Co. has an 8,000-bbl. well on the Chancellor lease from sand at 2,976 to 3,003 feet. It is an offset to Penn and the Atlantic Oil Producing Co.'s No. 1 McCorkle, which was an even better initial producer. Both wells are on the east edge of the town of Wortham and it is in that part of the field, and north and possibly northeast of it, that many old men believed Wortham would show its biggest production. The Humble Oil & Refining Co. played this part of the area in its leasing campaign but its first well, just in on the Ella Dodd farm, which is at the very gateway of the Humble's block of acreage in that part of the field, made a disappointing showing. It got sand at 2,987-3,015 feet and flowed 804 bbls. the first 16 hours, or at the rate of about 1,200 bbls. a day. This well is located about 1,200 feet north of the Kirby Petroleum Co.'s big well on the Chancellor, and on a lease which was formerly carried as the H. Redus 20 acres, on which it is located in the southwest corner. A well of much higher initial production was expected.

Dry Hole With No Sand

The Humble Oil & Refining Co.'s No. 2-A Crouch in the Limestone County end of the field is dry at 3,028 feet. No sand was found. The failure is located in the northeast corner of the farm. The company has a producing well on the northwest corner of the same property.

The Rio Bravo Oil Co. completed two more wells on the H. & T. C. Railroad right of way. No. 2 made 962 bbls. the first five hours from sand at 2,964-3,000 feet. No. 4 made 4,500 bbls. the first 24 hours from sand at 2,962-98 feet.

The Boyd Oil Co.'s No. 2 Manning in Freestone County bailed dry at 3,004 feet, but it will be drilled deeper.

E. L. Smith has sold his Lindley tank farm on which tank construction had begun to J. K. Hughes, consideration not stated.

The Boyd Oil Co.'s No. 6 on the Simmons farm was a 3,600-bbl. well from sand at 2,941-60 feet but later it was pinched down to 1,600 bbls.

The Gulf Production Co.'s No. 1 Ferguson was drilled to 3,016 feet and was producing 1,000 bbls. a day.

The Southern Exploration Co., drilling on the Longbotham farm, got a gas blowout at 1,250 feet. The well showed 40,000,000 feet the first day but later was flowing about 15,000,000 feet.

Water and Fuel Situation

The water situation in the field shows some improvement. Recent rains have partly filled the creeks out of which water is pumped into reservoirs for field distribution. One of the first activities of Colonel Humphreys, president of the Boyd Oil Co., after he knew that a field had been opened, was to lease the water rights of creeks in the Wortham area and to build dams and pumping plants and lay water lines to the leases of his company. He also sold water to other operators. The fuel situation is being well taken care of, the Lone Star Gas Co. supplying much of the field with gas from its big line while operators in the field with gas from producing wells are getting it from gas traps and in some cases selling to others.

There are 217 wells drilling and 145 derricks up, many of which are rigged up ready to go as soon as water can be procured in sufficient quantity. This makes a total of 362 operations. The Humble Oil & Refining Co. has 32 wells drilling and 19 derricks up, most of them rigged up; the Boyd Oil Co. is drilling 28 wells and has derricks up for 29 more, 8 of them rigged up; the Atlantic Oil Producing Co., Gulf Production Co., Magnolia Petroleum Co., Pure Oil Co., J. K. Hughes, Mrs. J. K. Hughes, Kirby Petroleum Co., Moss and others, Murchison & Fain, Republic Production Co., Rio Bravo Oil Co., E. L. Smith and others, Simms Oil Co. and Marland Oil Co., R. R. Penn, Barclay & Meadows, Cranfill & Reynolds, Carter & Lytle, Farish, Watts & Collins, Gay Hammond and others, L. P. Hammond, Hinkle and Rowan, Moss & Keeling, Massey and others, Mills Bennett, Ray and others, Sun Oil Co., Tarver and others, Tri Wy Oil Co., Welch and others, Godley Oil Co., Mutual Oil Co., Owenwood Oil Corp., Skelly Oil Co., Stroube & Stroube, Wheelock & Collins are all drilling in the field, either in Freestone or Limestone Counties.

Wildcat Failures

The Powell Petroleum Co. abandoned at 3,535 feet No. 1 Green, Ruching survey, Navarro County, after it had been bailed dry.

In Limestone County Gardner and others' No. 1 Speight, Varela survey, was abandoned as dry at 3,600 feet.

PENN MEX COMPLETES TWO MORE GOOD WELLS

PITTSBURGH, Pa., Jan. 3.—Word has been received at the home office of the Penn Mex Fuel Co. here that this company, in conjunction with the Transcontinental Petroleum Co. (subsidiary of the Standard Oil Co. of New Jersey) has just completed two more producers on their Paciencia tract in the Cacalilao Field, in Mexico, making a total of six wells on this tract.

No. 12, which came in for 20,000 bbls. is located 800 feet from No. 13, which came in a couple of months ago rated at 30,000 bbls. and both are near the center of the tract. No. 12 is 270 feet shallower than No. 13.

No. 14 is located about 1½ miles northwest of No. 12 and came in for 800 to 1,000 bbls., thus indicating either a separate pool from the original discovery or else one of very large proportions.

Four additional wells are now drilling and pipe line installation connecting with Transcontinental's main lines to Tampico is 50 per cent completed. Shipments will commence some time in February.

CALIFORNIA GASOLINE SITUATION IMPROVES

LOS ANGELES, Calif., Jan. 3.—The high lights in the local gasoline market during the last week are the campaign of the big companies to secure a larger gallonage, the appointment of a receiver for a small refinery, the going out of business of one distributor, and a continuation of the elements which are gradually eliminating the bootleg peddler.

No price changes have occurred. The domestic gasoline price structure is somewhat improved by a reduction in the number of the independent price cutters.

The domestic fuel oil market remains unchanged. Casinghead gasoline is in good demand and commanding fine prices. Spot orders of casinghead have brought as high as 14 cents this week. The lube and kerosene market is dull.

Most of the fuel oil and crude leaving the Los Angeles harbor is consigned to Pacific ports along the coast. A cargo of gasoline to England and one of kerosene to China comprised the foreign exports.

MINERAL WEALTH INCREASES

OKLAHOMA CITY, Okla., Jan. 3.—The value of Oklahoma's mineral wealth was increased from $4,000,000 in 1901 to $410,000,000 in 1923, according to a recent report made by Dr. Charles N. Gould, director of the Okahoma Geological Survey. The value in 1923 of petroleum, natural gas and casinghead gasoline, he says, was $342,000,000. The average annual mineral wealth of the State between 1918 and 1923 was $355,000,000, while the average agricultural wealth for that period was $300,000,000.

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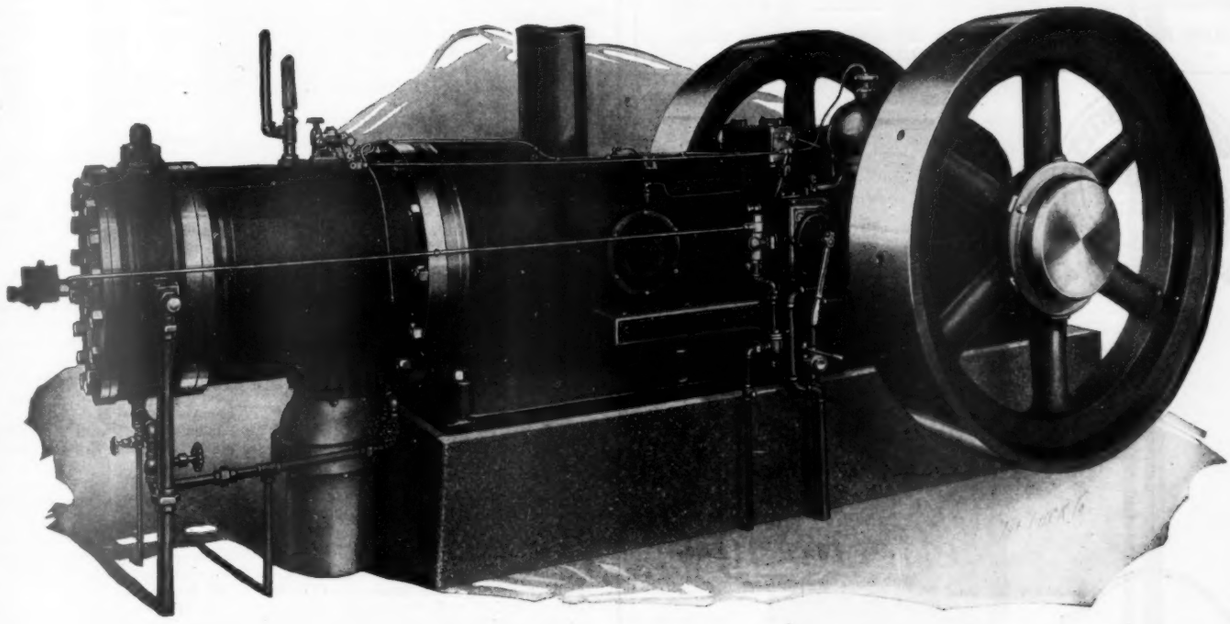

THE NEW TYPE "SBU" PRIMM OIL ENGINE

PRIMM Oil Engines specially equipped for Oil Well Drilling have many advantages over forms of power that have been used in the past.

They weigh no more than a boiler for a steam engine of the same size—neither are they as bulky to move around.

The fuel cost of operation of a "PRIMM" engine is a matter of but a few cents per hour.

The speed of the "PRIMM" Drilling Engine is controlled from the derrick and its quick pick-up when the tools drop enables it to "get out of the way" readily.

When the tools are being pulled, or the well bailed out, the new "PRIMM" will maintain constant speed regardless of the amount of cable on the bull wheel, or reel—saving much time in pulling out or bailing.

The new "PRIMM" engine is built to last and has a semi-steel cylinder, steel crosshead, high point carbon steel piston rod and crankshaft.

The "PRIMM" engine has long been a favorite among Pipe Line men—its simplicity and heavy duty type of construction fits it admirably for continuous service under severe operating conditions.

Further information will be gladly furnished.

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727 Cheney Avenue

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10,000-Barrel Tanks Erected for Meridian Petroleum Corp., Okmulgee, Okla.

WARREN CITY TANKS
Any Size - Any Place - Any Purpose
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To meet your every requirement effectively our entire organization is dedicated to one ideal--- quality of manufacture

No. 2 of a Series

This is advertisement No. 2 of a series designed to convey this company's service to the oil industry.

The WARREN CITY TANK & BOILER Co
WARREN, OHIO

N. LOUISIANA-ARKANSAS

(Continued from Page 48)

Brown, Section 26-15-17 and setting liner in 13 feet of sand at 2,255 feet in No. 10 Smith, Section 31-15-16.

The Marine Oil Co. is waiting on standard rig to pump No. 3 Hays at 1,970 feet with 700 feet of oil in the hole, Section 4-16-15. The Marr Oil Corp. is testing No. 4 Mullins with 150 feet of oil in the hole and 12 feet of sand at 2,285 feet, Section 28-15-16.

The Mazda Oil Co. is bailing to test 23 feet of broken sand at 1,995 feet in No. 1 Berry, Section 33-15-15 and in Section 29-15-16 are waiting on standard rig to pump No. 2 Fincher at 2,274 feet with 1,350 feet of fluid, 40 per cent water and with 10 feet of sand. Owens and others are rigging up No. 2 Smith, Section 23-15-17.

The Penguin Oil Co. has gone back into No. 2 Hardin, completed last March at 2,012 feet pumping 15 bbls. and arranging to mill through casing, Section 27-15-16. Reynolds and associates have derrick up for No. 4 Brierton, Section 25-15-17.

Riggs and others set 10-inch casing at 60 feet in No. 3 Green, Section 23-15-17. The Roxana Petroleum Co. is waiting on standard rig to pump No. 2 Snyder at 1,955 feet, Section 34-15-16. H. A. Shmuller is arranging to pump No. 1 Wells at 2,310 feet, Section 25-15-17.

J. S. Smith set 10-inch casing at 80 feet in No. B-2 Shirey, Section 36-15-17. Staples and associates set 10-inch casing at 50 feet in No. 4 Smith, Section 36-15-17. Staves and others are down 2,000 feet in No. 4 Jeffus, Section 26-15-17.

The Texas Co. is drilling at 1,005 feet in No. 2 Reynolds, and set 9⅝-inch casing at 60 feet in No. 3 and the same in No. 4 all in Section 23-15-17. They have a fishing job at 2,230 feet in No. 1 Ward and drilling at 1,865 feet in No. 2, Section 23-15-17. In Section 31-15-16 it is down 1,900 feet in No. 7 W. A. Smith and set 10-inch casing at 60 feet in No. 8. It set 6-inch casing at 2,190 feet in No. 5 Stout Lumber Co., Section 31-15-16.

Webster Parish

Considerable interest is being shown in Webster Parish development both in the Cotton Valley and Springhill territory. Several additional wells were started during the past week and it is expected drilling activity in both districts will constantly increase during the next few weeks.

In Springhill district Butler & McMurray have started drilling No. 1 Wheeler and are down 100 feet, Section 35-23-11. The Louisiana Oil Refining Corp. set 12½-inch casing and drilled to 700 feet in No. 1 Armor, Section 21-23-9. The Texas Co. has derrick pattern on location for a well on the Lewis lease, Section 25-23-10.

The Arkansas Fuel Oil Co. tested No. 1 Frazier dry with 2 feet of sand at 2,690 feet and arranging to go deeper, Section 27-23-11. Belchic & Laskey bailed casing dry at 2,620 feet and drilling in No. 6 Pine Woods Lumber Co., Section 28-23-11 and down 700 feet in No. 1 Martin, Section 34-23-10.

The Bethany Oil & Gas Co. set 6-inch casing at 2,580 feet in No. 2 T. R. Wiley, Section 6-22-9, and the Fortuna Oil Co. is drilling lime at 1,925 feet in No. 1 Crichton, Section 19-21-9. J. K. Wadley is drilling lime at 2,500 feet in his first well on the Porter Woodley lease in Section 31-23-9.

In the Cotton Valley district, the Crusader Pipe Line Co. which has purchased the Oil Field Gas Co.'s holdings, set 6⅝-inch casing at 2,470 feet in No. B-4 Hope estate, Section 24-21-10 and in Section 13-21-10 set 6⅝-inch casing at 2,470 feet in No. B-5 Hope estate; drilling gumbo at 1,300 feet in No. B-6 and have location made for No. B-7.

Alabama Petroleum Co. is waiting on standard rig for No. A-3 Pardee at 2,520 feet with 1,700 feet of oil in the hole and 17 feet of sand; also waiting on standard rig to pump No. 1 Ramsey, Section 19-21-9, which stands 500 feet in oil and 1,300 feet of salt water at 2,530 feet.

The Humble Oil & Refining Co. has temporarily abandoned No. B-5 Bodcau, Section 13-21-10 and in the same section set 6⅝-inch casing at 2,465 feet in No. B-8 Bodcau; rig up for No. B-11 and on the Davis lease same section is setting liner in 18 feet of sand in No. 2 at 2,520 feet and the same in 25 feet at 2,520 feet in No. 3. In No. 4 Davis it is drilling lime at 2,030 feet; down 2,575 feet in No. B-9 Bodcau, Section 28-21-10 and set 6⅝-inch casing at 2,485 feet in No. B-10. In Section 26-21-10 it started drilling No. 1 Gray and is down 120 feet.

The Louisiana Oil Refining Corp. set 10-inch casing at 470 feet in No. 3 Lindsay, Section 22-21-11.

Four miles south of production McDowell and associates drilled to 2,430 feet in No. 1 Hortman, Section 15-20-10.

Moffat & Murphy set 6⅝-inch casing at 2,490 feet in No. 2 Coyle, Section 28-21-10. The Ohio Oil Co. has four rigs running on the Bodcau lease in Sections 13 and 27-21-10 with rig up for No. 15 and locations made for two more. They set 10-inch casing and drilled to 1,100 feet in No. 1 Harris, Section 16-21-10.

The Palmer Corp. is setting 6-inch casing at 3,450 feet, total depth 3,460 feet, in No. 1 Miller, Section 29-21-10, and drilling chalk rock at 1,630 feet in No. 1 Tillman, Section 28-21-10.

Bienville Parish

The Roxana Petroleum Co. is down 2,085 feet in No. 1 Bryan, in Section 30-17-8, an interesting test 20 miles south of the Homer Field, between Gibsland and Bienville.

Bossier Parish

In the Elm Grove territory, the Arkansas Natural Gas Co. shot casing in No. A-4 Van Hose from 1,885 feet to 1,186 feet, tested 3,000,000 feet of gas and is whipstocking at 1,865 feet, total depth 1,903 feet, Section 31-16-11. The Palmer Corp. is drilling at 50 feet in No. B-7 Hodges, Section 30-16-11.

The Atlantic Oil Producing Co. shut down No. 2 Bodcau temporarily at 2,635 feet in the north end of the parish in the Springhill district, Section 24-13-12.

Arkansas Natural Gas has derrick built for No. 1 Bolinger, Section 32-23-11.

Eight miles east and a little south of Shreveport, Skannall and associates set 6-inch casing at 2,390 feet in No. 1 Roscoe, Section 14-17-12.

G. W. Weatherbee has rig up for a well on the Holland lease in Section 9-22-11.

Caddo Parish

In the Pine Island district, the Fortuna Oil Co. has rig up for No. 14 Dean-Thigpen, Section 5-20-15. The Tholl Oil Co. is testing No. 2 Bashara at 1,400 feet with 6-inch casing set, Section 23-21-15.

In the Caddo Lake district, the Gulf Refining Co. is bailing to test No. 219 Ferry Lake at 2,285 feet and has location made for No. 220, Section 22 and 14-20-16. The Texas Co. is down 3,270 feet in No. 1 Federal Jeems Bayou, Section 15-20-16.

In the Waskom district, Ford and associates set 10-inch casing and drilled to 800 feet in No. 1 Agurs, Section 14-17-16. The Fortuna Oil Co. set 12½-inch casing at 185 feet in No. 1 J. H. Bryson, Section 8-17-16, and the Waterman Drilling & Development Co. tested salt water and is waiting orders at 980 feet in No. 1 Hunting Club, Section 17-17-16.

Haynes Brothers set 15½-inch casing at 60 feet in No. 1 Louisiana Live Stock & Planting Co., Section 5-19-16.

Fortuna Oil Co. has gone into No. 10 Robertshaw, completed in March, 1922, as a 45-bbl. well at 2,910 feet and is drilling at 3,015 feet, Section 23-21-15.

Claiborne Parish

Seven miles northeast of Homer, the El Dorado Chief Oil Co. is down 2,400 feet in No. 1 McElwee, Section 13-22-7.

J. P. Evans and associates are drilling at 2,040 feet in No. 1 Taylor, Section 5-19-5, 10 miles southeast of Homer.

De Soto Parish

L. V. Ulrey has drilled to 750 feet in No. 1 Robinson, Section 22-11-12, 3 miles north of Pelican.

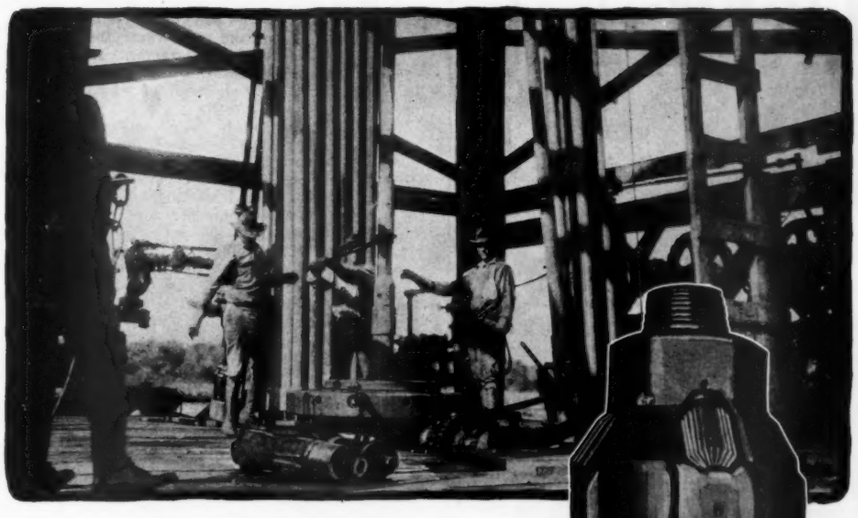
La Salle Parish

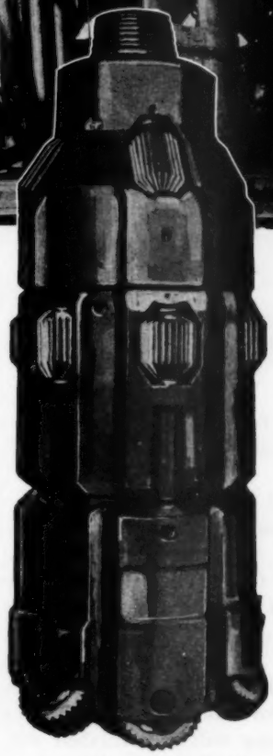
Urania Petroleum Co. has rig up for No. 5 Urania, Section 18-10-2e.

Morehouse Parish

Oil Field Exploration Co. is down 1,500 feet in No. 1 R. Watson, Section 13-20-4.

(Continued on Page 113)





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The fact that an Agathon Alloy Steel was used in making the world's largest rotary bit has its significance. In many of America's famous oil fields you will find the most severe drilling being accomplished with Agathon Alloy Steel bits. Ask for the assistance of our metallurgists in selecting the proper alloy steel for your bits, joints, jars, etc. Get our booklet—"Agathon Alloy Steels."

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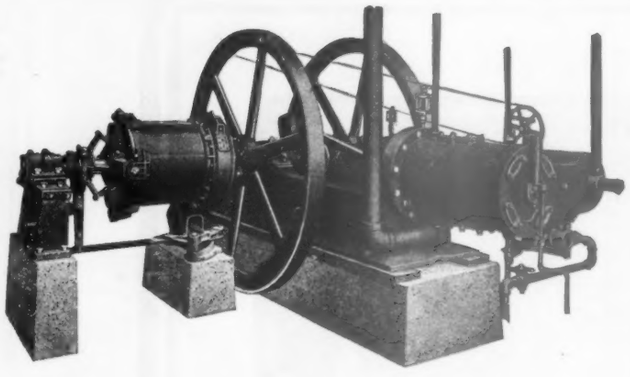
AGATHON ALLOY STEELS

Pulling Tools



A drilling engine, to be successful, should be able to pull tools fast. The following report shows how Reid Drilling Engines can pull tools.

The well was located near Logan, Ohio. The tools used were a 3½ inch by 38 foot stem, a 5 inch by 5 foot bit, drilling jars and rope socket, the string totalling forty-six feet in length.

This string of tools was pulled from a depth of 2525 feet in eight minutes, 15 seconds, or at the rate of over 300 feet per minute.

The bailer was pulled from this depth, 2525 feet, in three minutes, 25 seconds.

Speed pulling tools and bailers as shown in the above report is one of the many advantages gained by using Reid Drilling Engines. They are fast and easy to handle. Their economy of fuel is such that an engine has been known to pay for itself in the amount of fuel saved on the first well drilled.

We have printed a booklet in which will be found reports of some of the work done by Reid Gas and Oil Drilling Engines. A copy will be furnished you upon request. Ask for Bulletin No. 28.

Joseph Reid Gas Engine Company
Oil City, Pennsylvania, U. S. A.

BRANCHES AND AGENCIES—Marietta, Ohio; Logan, Ohio; Newark, Ohio; Ft. Recovery, Ohio; Shreveport, La.; Charleston, W. Va.; R. B. Moore, Bolivar, N. Y.; Bradford Supply Co., Robinson, Ill.; Frick & Lindsay Co., Bradford, Pa., and Kentucky Distributors; S. R. Shoup, 708 Pacific Electric Bldg., Los Angeles, Cal.; Oklahoma, Kansas, Texas, Arkansas and Wyoming, Frick-Reid Supply Company, Tulsa, Oklahoma, and Branches.

BRANCH SHOP—TULSA, OKLAHOMA

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Farming Follows Oil Making Poor Land Pay By Offering Market

You can't mix oil and water but farmers of West Texas are mixing oil and agriculture quite profitably, to judge from the farming activities which have sprung into existence there as a direct result of the discovery of oil fields, says Victor H. Schoffelmayer in the Dallas News.

A lot of well-meaning persons believe that the discovery of oil has ruined farming, but this is not the case where the oil field has a permanent character. In the very nature of things an oil field attracts thousands of people, all of whom have to be fed and housed.

Very frequently oil is struck on nonagricultural land, which before the oil boom supported only a sparse population. Most of the oil lands in West Texas were grazing lands of a kind scarcely adapted to the production of bumper crops, but with the founding of towns and cities the whole scope of farming and ranching changed and those farmers who seized their opportunity today are making money supplying an oil field population with the necessities of life, and in a measure, many of its luxuries.

In an all-wise purpose of the Creator all land undoubtedly has a definite value and purpose. It may not be good farming land at first glance, but in the hands of a determined and painstaking farmer can be built up to high productivity. Or it may be so poor that it is scarcely fit for grazing, but these are some of the best oil producing lands in the world.

So, after all, the unfathomable plan of Nature seems to be pretty well balanced. In proof of this assertion it is only necessary to visualize the great oil fields of Texas, Oklahoma, Louisiana, and Arkansas, known as the Mid-Continent Field. Practically this entire field embraces either nonagricultural land or land not primarily adapted to bumper crop production. Most of these oil fields are on former ranching lands, worth at best only a few dollars an acre compared with really rich farming lands such as occur in the delta regions of the Mississippi or other big rivers or in the ancient basins or depressions which have accumulated the silt and precious soil throughout the ages.

Of course, there are some rich farming lands which have oil deposits underneath; for instance, in the Corsicana Field and parts of the Mexía oil belt on Central Texas black lands. However, these lands are the exception which seems to prove the rule.

Better Farming Follows Oil

It has been the writer's observation that diversified farming often follows the discovery of an important oil field. In fact, there are numerous instances in the Southwest where whole counties have been transformed after the discovery of oil into prosperous farming communities as well as into prosperous towns and cities. Witness Eastland County for one!

Before the discovery of oil there some years ago there was very little attempt at farming. The rolling lands, which constitute the bulk of its territory, were given over to haphazard ranching. Little attempt at the diversification of crops was made. When oil was struck the whole situation changed. The towns of Eastland, Ranger and Cisco sprang up almost overnight. Thousands of people flocked to the new oil field of West Texas. True, many a good ranchman and small farmer were ruined then and there because they could not withstand the lure of oil and its attendant evils, but in their places arose an army of small agricultural producers who saw an opportunity to sell poultry and eggs, milk, cream and butter, vegetables and fruit, hay, grain, sorghum and other farm products on a cash market.

For the first time in their lives they found cash sales for dozens of farm products which had never been produced on a large scale in Eastland County because there was not the requisite population before oil came.

Ride over Eastland County's superb hard-surfaced highway today and see the glistening white poultry pens on each side and thousands of dazzling white Leghorns ranging through the live oak brush. It reminds one of California. All of a sudden thinking men found an opportunity in the coming of oil which had not existed before its advent. It was all a matter of adjusting one's self to the oil boom. As a result land values, which before the oil boom hovered around $6 to $15 an acre today are anywhere from $30 to $100 an acre, depending upon location. Eastland County calls itself "The Egg Basket of West Texas." Does that sound as if oil had ruined the country? Yet it has been a common saying that oil booms are the death knell of farming, but close analysis shows this not to be the case where the oil boom develops into a stable industry with a stable population.

South Vernon Boom On

Wilbarger County is one of the largest counties of West Texas to have a big oil boom. At South Vernon, again on what is known to be nonagricultural land, wells of 1,500 to 2,000 bbls. daily capacity have come in lately which are attracting the usual oil field population. Instead of oil being found on the highly productive Pease River Valley lands of which Wilbarger County boasts, with right, the oil came in along a red clay ridge so poor that it took anywhere from 10 to 20 acres to range a steer. That is one of the little known blessings of oil that it usually is associated with land of low agricultural value, thus balancing the books in its own way.

Did oil spoil W. H. Stephens, on whose farm the discovery well came in some weeks ago near South Vernon? No! He intends to go right on farming, though he probably will acquire better land. His 320 acres are typical ranching land and already approximately 30 derricks have arisen along the ridge to test out its possibilities. Vernon, 8 miles away, is already experiencing the benefits of an oil boom. The highway between the oil field and Vernon is cluttered with trucks and wagons hauling lumber, pipe and supplies of all kinds. The boom may have profound effect upon Wilbarger County's agriculture. From an important cotton-producing county it may find itself forced into diversification because of the opportunity an oil field offers for the production of foodstuffs for an increasing population.

Oil field workers are good spenders. They make their money quickly. They are too busy drilling for oil, operating oil refineries and tank farms to devote any time to raising gardens or chickens. They leave that to the small farmer and pay him handsomely for what he produces.

What Oil Did for Tulsa

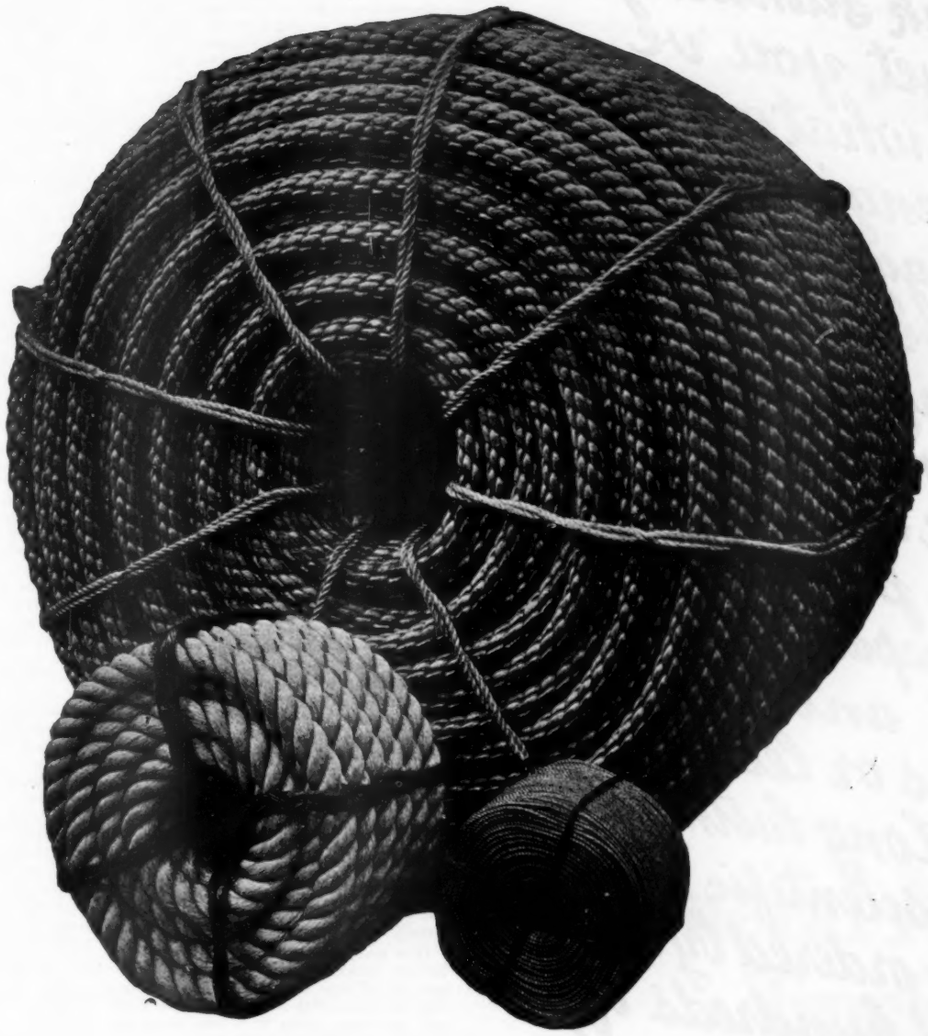
Development of an important oil field is a real boon to the farmers in that territory. Take the section of Oklahoma of which Tulsa is the center. Before oil was struck there was practically no Tulsa, yet, Tulsa is not altogether the result of the discovery of oil. The agriculture which has developed around Tulsa, the big cash market which has developed in that city for multiplicity of farm commodities never before thought of in that part of Oklahoma, has helped to keep Tulsa great. Oil and a stable agriculture may go hand in hand provided the oil field is not a "flash in the pan."

In the case of oil discoveries in the neighborhood of Tulsa they are all practically on inferior farming lands, formerly bequeathed to Indians. The same holds good for the oil discoveries in the Ardmore and Healdton Fields of Southern Oklahoma.

The South Texas Fields around Beaumont are what may be termed in a region of nonfarming land, as the only agricultural development of magnitude to date is that of rice growing. In fact all the coastal lands will have to be drained at heavy cost before they can be considered as farming lands.

The Breckenridge and Burkburnett Fields in Northwest Texas helped to develop the agriculture of a large territory around Wichita Falls, culminating in the construction of the big irrigation dam and reservoir on the Wichita River. Oil

New Bedford Cordage



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brought the population by developing industries dependent upon oil, such as refineries, casinghead gas plants and the like.

In Arkansas, Too

It is notable that the new oil fields of West and Southwest Texas are largely in nonagricultural sections, mainly ranching lands, the development of which will bring towns and business and with it a new agriculture.

The big central Arkansas oil field is on typical nonfarming land, a region of light sand that will require much building up to make it productive. Yet, because of the teeming population that has sprung up almost over night, farmers are enabled to spend money on unproductive land to make it yield profitably because there is a demand for truck crops, milk, butter, poultry and eggs, all offering a much larger return than straight feed crops as were formerly grown.

The facts seem to be that oil fields offer decided and new opportunities to farmers who will adapt their operations to the new requirements. Oil and water will not mix successfully but oil and farming seem to supplement one another, at least where oil development partakes of a permanent character.

RIVER ACCRETIONS FIGURE IN LEASE SUIT

WINFIELD, Kans., Jan. 3.—The first round of the battle over river accretions adjacent to the Rainbow and Graham oil fields, Kansas, involving several hundred acres of what is now considered valuable oil land is being fought in the District Court at Winfield. Farmers who had leased their lands to oil companies later leased the accretions between their farms and the Arkansas River to outside interests to which the oil companies objected, resulting in the court action.

F. Dumont Smith, Chester I. Long, Messrs. Stanley and Houston and other legal high lights were present to go over the offering of court decisions calculated to show that the oil companies did not have a right to drill upon these lands where they have adjacent leases unless the leases set up specifically an outline which will encircle the accretions.

On the one hand were lawyers claiming the right in behalf of the oil companies represented in the field to drill upon the accretions so long as they are between their respective leases and the river and an accretion which is attached to the property covered specifically by their leases, and on the other legal talent seeking to have these accretions set apart from any coverage by the leases already of record.

How many million dollars are involved in the cases is problematical. There may be millions and there may be nothing, all depending upon what the drill will determine when it is sent down to a level of 3,200 to 3,500 feet.

The cases ask for an order to restrain the oil companies from drilling on any of these accretions. Up to the present the companies have not moved that close to the river in their activities, but springtime promises a widespread operation which will cover the entire river bottom.

Following a conference of the attorneys the hearing was suspended and the plaintff was given leave to file a supplemental petition to be heard on January 12.

NICARAGUAN OIL GRANT?

A news agency says Robert J. McKinley of Kansas has obtained an oil concession from the Nicaraguan Government for the departments of Bluefields, Chontales, Nueva Segovia, San Juan del Norte, and Cabo Gracias, and the districts of Rio Grande, Prinzapolka, and Siquia. A deposit of $50,000 was required by the Government for the franchise. Under the agreement five wells must be drilled within five years. The concession will run for 50 years. The Government and the municipalities will receive 14 per cent of the gross receipts from any oil.

Campaign for Safety Making Progress in California Industry

By Roy Willmarth Kelly
Manager of Industrial Relations, Associated and Pacific Oil Companies

So rapid has been the recent growth of the California petroleum industry it is difficult to describe any phase of its operations with any degree of accuracy and completeness. There are now operating in the State several hundred oil companies, having on their payrolls upwards of 70,000 employes. To give you some worthy perspective of what these companies and the organizations interested in the welfare of their employes have recently accomplished, it seems best to attempt to describe only three or four of the outstanding tendencies, leaving apart the detail of safety equipment and individual practices.

In 1923 the California State Industrial Accident Commission issued in tentative form a set of petroleum safety orders. These were prepared as the result of an extended series of meetings participated in by oil operators, safety engineers, and the safety inspectors of the commission.

Under these regulations, every company must provide first-aid cabinets where eight or less men are employed in one locality. Both employers and attendant physicians and surgeons must make reports of every injured employe where the disability lasts through the day of the injury or requires medical services beyond the ordinary first-aid treatment.

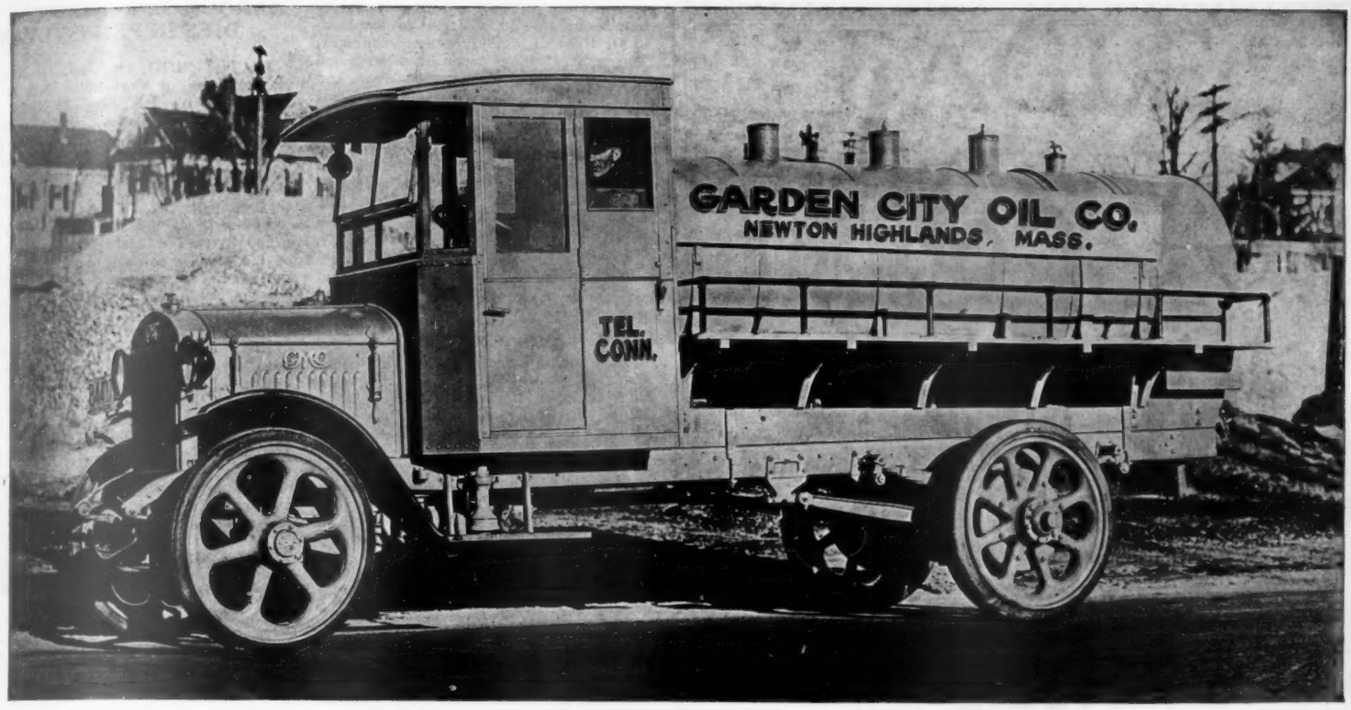
Under the Petroleum Safety Orders, specifications are given for the construction of derricks and for safeguards for both drilling and pumping equipment. The orders also give specifications for safeguards for loading racks, and required the use of gas masks and the presence of an assistant whenever a man is put inside a tank or container known to have previously held oil or gas. Provisions are also made for the prevention of fires at distributing plants, loading racks and warehouses where static electricity might cause petroleum vapors to ignite. Under the orders the complete list of safeguards are required only on new construction, except in cases where wells are being redrilled, when certain essential safeguards must be incorporated in the derrick construction. All this work is going forward very successfully, and should result in materially decreasing the number of hazards encountered in the drilling and operation of oil wells.

For enforcing these orders, the Industrial Accident Commission maintains a small force of inspectors. It also publishes a monthly bulletin disseminating safety ideas of educational value.

One of the outstanding contributions toward safety in California has been made by the United States Bureau of Mines through its first-aid courses. Its instructors are constantly at work giving lectures and demonstrations throughout the State. First-aid courses, usually one week in length, have now been given to the employes of nearly all the larger companies and many smaller concerns, in the producing fields, pipe line departments, sales departments, and in most of the larger refineries. This work has been supplemented by instructors employed by many of the large corporations, engaged both in the oil industry and in other industries, and by the work of the American Red Cross. The State holds an annual first-aid meet.

The California Society of Safety Engineers has taken an active interest in promoting safety in the oil industry. In April of this year, the National Safety Council held in San Francisco what was known as the Pacific Safety Conference, the first large conference of the kind to be convened on the Pacific Coast. Following the two-day convention sponsored by the National Safety Council and the California Society of Safety Engineers, the petroleum industry held a session attended by some 300 delegates, and resulted in the formation of the Petroleum Safety Handbook Committee.

The original purpose of this commit-



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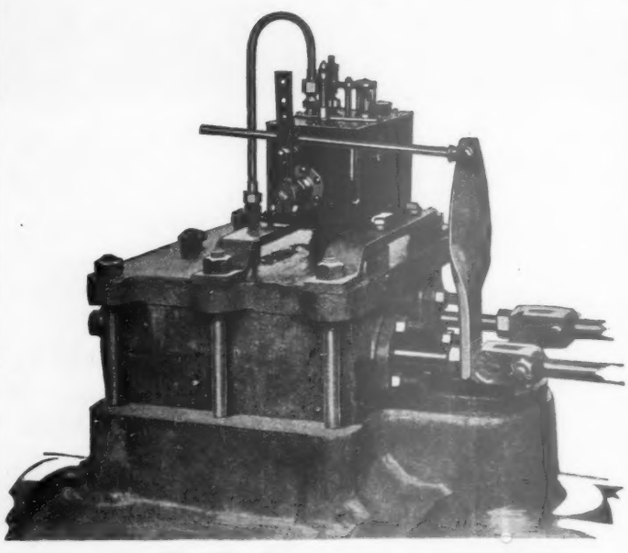

McCord Class "B" Lubricator on slush pump

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tee was to prepare a series of safety handbooks for distribution to employes in all divisions of the petroleum industry. The committee has since been requested by the California Chamber of Mines and Oil to act as its official committee on all safety matters, and it is anticipated it will be continued as an active body. At present, there is a main committee which outlines general policies. There are, in addition, subcommittees which will deal with the following divisions: Producing fields, pipe lines, refineries, marine transportation, automotive equipment; sales, department and engineering construction.

Each subcommittee breaks up the field assigned to it into a number of sub-topics. Each member of the committee will work on an assigned subject, and the material thus brought together will be put into shape by the executive secretary of the Chamber of Mines and Oil and by H. C. Miller of the United States Bureau of Mines, who is cooperating with us. Since the formation of the committee, several articles on safety have been published every month in the Mining and Oil Bulletin, the official journal of the Chamber of Mines and Oil, and contributions have been made to other oil trade journals.

This committee is largely the outgrowth of a cooperative undertaking entered into by five or six of the leading oil and gas companies of the State two years ago, when a safety film was produced under the title "When Wages Stop."

It is difficult to say very much about the accomplishment of individual oil companies in the safety field. Several larger companies are employing one or more safety engineers, and are active in holding meetings, making inspections, installing safeguards, and doing educational work.

Most of us who have given very much thought to the subject are well agreed that safety is only one aspect of the whole problem which confronts us in dealing with our employes. It is useless to set up a thorough-going safety campaign unless we back it with good housing, proper sanitation, adequate medical supervision, and modern employment practices. California companies are giving considerable attention to these matters, and if we have had any considerable success in safety, it has been largely due to the fact that these other conditions, prerequisite to a satisfactory labor situation, have been properly met. In our own company, safety education has been part of the functions of the Industrial Relations Department. It is being handled in part by men who are also responsible for employment, general education, housing inspection, and other similar personal activities. The greater part of our progress along these lines has been due to the work of individual superintendents and foremen who have been helped to get the idea that there is room for improvement, and they, with the help of our regular resident engineers, have instituted and carried on practically all the mechanical safeguarding and the changes which have taken place during recent years in our methods of operation. We have, of course, helped them greatly by conducting meetings, giving publicity to successful accomplishments and by compiling every month a statistical summary of our safety record, arranged by occupations and by divisions.

MEXICAN OIL TAXES UP

December schedule of taxes on oil production in Mexico show small fractional advances over November levies, fixing the tax on light crude oil at 24½ cents a bbl., on fuel oil 22½ cents and on heavy crude 13 cents. Including the export duty, the total December tax on light crude is 32½ cents a bbl., on fuel oil 29 cents and on heavy crude 18 cents.

OIL FROM SPITZBERGEN COAL?

The manager of the Swedish coal mines at Spitzbergen says the Swedish company will follow the Norwegian example and try to produce oil from Spitzbergen coal, if investigations prove that this can be profitably effected.

MARQUIS D. ROBINSON DIES IN PENNSYLVANIA

PITTSBURGH, Pa., Jan. 3.—Marquis D. Robinson of Coraopolis died at his home there recently, aged 73 years. He was born in Erie County, and as a young man operated a boat on the old Erie and Pittsburgh Canal. At the age of 19 years he went to Titusville where he resided for 30 years. In 1900 he moved to Coraopolis.

For a period of 50 years he was engaged in the oil business. He was one of the pioneer refiners in Titusville and in 1881 built a refinery at Havana, Cuba, for the Standard Oil Co., and also built the first independent refinery in the Mid-Continent Field at Humboldt, Kans.

After moving to Coraopolis, together with his sons, he organized the Robinson Oil Co. He was also engaged in the oil producing business in Butler, County, Pennsylvania.

He was a life long member of the Methodist Episcopal Church and is survived by his wife, Flora C. Robinson; one daughter, Mrs. Carleton E. Stone; two sons, Ellsworth D. and Ovid D., and seven grandchildren.

NEW CHEMICAL CATALOG OF INDEXED ABSTRACTS

Copies of the ninth edition of the Chemical Engineering Catalog, published by the Chemical Catalog Co. of New York City are being distributed. The new volume comprises 1,082 pages and is 9 inches by 12 inches in size. It is bound in flexible leather and the cover is printed in gold leaf, presenting an attractive appearance.

The technical and scientific books section covers 104 pages, listing practically every book in English dealing with subjects in which the users of the catalog are likely to be interested.

The Chemical Engineering Catalog is a "room full of individual catalogs, abstracted, indexed and assembled within the covers of a single volume." It is especially useful to chemical engineers, purchasing agents managers and all others who buy and specify equipment and materials in the industries using chemical processes.

AUSTRALIAN SEARCH FOR OIL CONTINUES

The well being drilled at Oralla, near Roma, Queensland, about which optimistic reports were sent out, had failed to justify them when the dropping of the drill stem into the hole ended the work. It is said a new location has been chosen and a new test will be drilled.

Australian reports say no important discoveries will be disclosed in the report of Dr. Wade regarding prospects of finding oil in payable quantities in the Northern Territory.

At a meeting of the Kimberley Petroleum Co. held at Adelaide, South Australia, the chairman, Norman Claxton, stated that Dr. F. G. Clapp proceeded on the company's area last April, and had been several months there investigating the geological conditions of the area. He returned to Broome in the middle of August, when he disbanded the majority of his party. He then proceeded out to the oil areas again, accompanied by one man, and using a tractor, and was still out. It would be some time before his report would be available.

EASTERN FIELDS

(Continued from Page 60)

Chapman Smith farm in Union district, Harrison County.

Big Order for Pipe

The Hope Natural Gas Co. has placed with the Youngstown Sheet & Steel Co. the order for its 100 miles of 20-inch gas line to extend from Gilmer County, West Virginia, southwest through half a dozen counties. The work of this project has already started and the line is expected to be finished late next year. A gathering system of small lines will radiate from the trunk line to every gas producing section through which it passes.

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OUTLASTA is the final result of our scientific investigation and shop practice. It is a hard, tough and dense anti-friction babbitt that is supreme as a general service alloy, pours easily and gives a clean uniform bearing. The best babbitt for general oil field uses.

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Eagle Wire Containers are made of 4 mesh galvanized wire cloth strongly soldered together. Their use is recommended for plugging oil wells with Eagle Lead Wool, as they permit the Lead Wool to pound out through the meshes, filling all crevices and irregularities in the walls of the well and effectively shutting off the flow of water.

SPECIFICATIONS

Style	Size of Container	Size of Casing	Quantity Lead Wool to Fill Container
"A"	3" x 36"	for 4¼" and 4½" Casing	25 lbs.
"B"	4" x 36"	for 4⅞" and 5⅜" Casing	40 lbs.
"C"	5" x 36"	for 6¼" Casing	55 lbs.
"D"	5½" x 36"	for 6⅝" Casing	60 lbs.
"E"	7" x 36"	for 8" and 8¼" Casing	75 lbs.

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General Offices: 48 South Street, New York City
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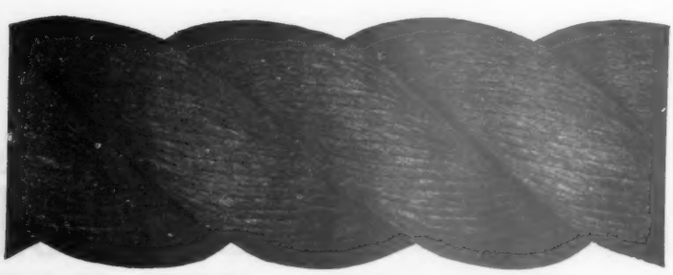
Stocks throughout the oil fields.

Pure Manila Bull Ropes

(Walk Laid)



Worthy of Trust

GASOLINE MOTOR WORKS WONDERS IN LIFE ON MAINE FISHING FLEET

How gasoline has revolutionized the life of Maine fishermen and their folks is told as follows by Alfred Elden in the Boston Transcript:

On February 22, 1900, I stood on the end of Portland Pier, and eagerly sniffed the salt air. Rounding Bug Light on the end of the harbor breakwater came a procession of Hampton fishing boats. Most of them carried a mainsail, foresail and one or two small jibs or headsails. On the weather-rail of each craft was the inevitable breastwork of sandbags to "hold 'em down," thus enabling skippers to crack on all sail and get to market with their fish as soon as possible. Shifting these 50 to 100-pound bags at the psychological mement when the little craft came up into the wind was an art that is only tradition to the present generation of Hampton boatmen.

Inside the breakwater the breeze lessened. Ballast bags were hoisted to amidships. Progress became slower and slower. The tide was setting out. Most of the men of the mosquito fleet resorted to a long heavy ash oar as an auxiliary means of propulsion. Sails flapped limply. The breeze was now no more than "air."

These were the days just before the coming of the fisherman's greatest blessing—the marine motor. Wrestling a living from the sea was a man's work for the Hampton boatman. Up at 1 or 2 o'clock in the cold gray morning, then a two or three-hours' back-breaking siege at the heavy oars, sometimes helped by a little pre-sunrise breath of wind, before the little craft, heavy and sluggish with its burden of ballast bags, forged its way through narrow passages to the "outside," off to where the fish were.

Then it was a case of strenuous fishing, either handlining or trawling, until 10 or 11 o'clock in the forenoon. The run to Portland depended on the wind. If it was favorable, well and good; if not, or if there was not enough for sailing, resort to the heavy oars again was the only alternative idly drifting or of reaching market too late to dispose of the catch.

Old Before Their Time

Ask any of the old-timers. They will tell you. At 40 a fisherman looked 60; gnarled, worn out, discouraged from the long hours, the drab, dreary grinds to and from the fishing grounds, then to market, and, finally, the long run to some island home far down the bay. After the boat was moored there came a hasty swallowed supper and the fisherman, with little more than time barely to exchange a few words with his wife and family dropped exhausted on his bed to snatch a few hours of sleep before there came another day and the same ceaseless toil.

Now, on this Washington's birthday morning the Hampton fleet filed slowly by, oars working, old-young backs creaking, into the docks at Commercial Long, Central and other fish wharves. It was then that the true prophet appeared.

George D. Thorndlike, young, slight, clean-cut, alert, a United States railway mail clerk on the Portland-Boston run, addressed me.

"Inside the next two or three years I am going to revolutionize the lives of these fishermen. With the marine motor I am going to make a miniature steamboat out of every one of those Hamptons. It is the coming thing as sure as night follows the day. With one of them the fishermen can laugh at the wind and weather, and save all the truck horse labor that is making them old years before their time."

There was a little group of us now and looks and outspoken comments were frankly skeptical.

"Let me make a prediction, a prophecy," continued Thorndike earnestly. "Five years from today a Hampton boat with a sail will be as rare in Casco Bay as a—as a—." He looked round for a simile. A dirty-faced youngster grinned at him. Thorndike grinned back, "As rare as a small boy with a clean face," he finished happily.

Now, the marine motor would undoubtedly have revolutionized the conditions of life for fishermen just as surely if George Thorndike had never existed. But it must be admitted that he it was who had the vision, the courage of his convictions, which he backed with his money, and the honor of convincing the at first skeptical Maine seafarers.

At Swampscott, Mass., he had a thorough demonstration of the possibilities of the marine motor in a small Swampscott dory. He bought the outfit, took the agency for the motor, resigned his position as railway mail clerk, and established himself on Portland Pier. And for the first five years he practically monopolized the marine motor business of Casco Bay. The motor he handled was the only one the fishermen would have anything to do with. Thorndike, with his Swampscott dory and little 3-horsepower kicker, kicked and puttputted the fishermen into line with remarkable speed and in great numbers. As to his prophecy? He had two years to spare. Three years from the time he started in business the last sail had disappeared from the Hampton boats.

What I would like to touch upon is the completeness of the process of revolutionizing the lives of the Casco Bay fishermen. It is a metamorphosis almost unbelievable. They have been released from a life of near slavery into a life of luxury. For if a man owns his own home, works decent hours, makes enough to pay his taxes and his just debts, and permits himself to live well, to accumulate a bank account, to own a phonograph and a radio set to while away the long winter evenings in his island domain—well, if that isn't luxurious living, independence for you, what is?

"Men Must Work"

The Hampton boatmen of Casco Bay are shining examples of the advance of civilization, of the march of progress during the past quarter century. Before the metamorphosis came they worked all their waking hours. Their women were little more than household drudges. With them, too, it was always work; no play, just work. A sad life. And many sad women!

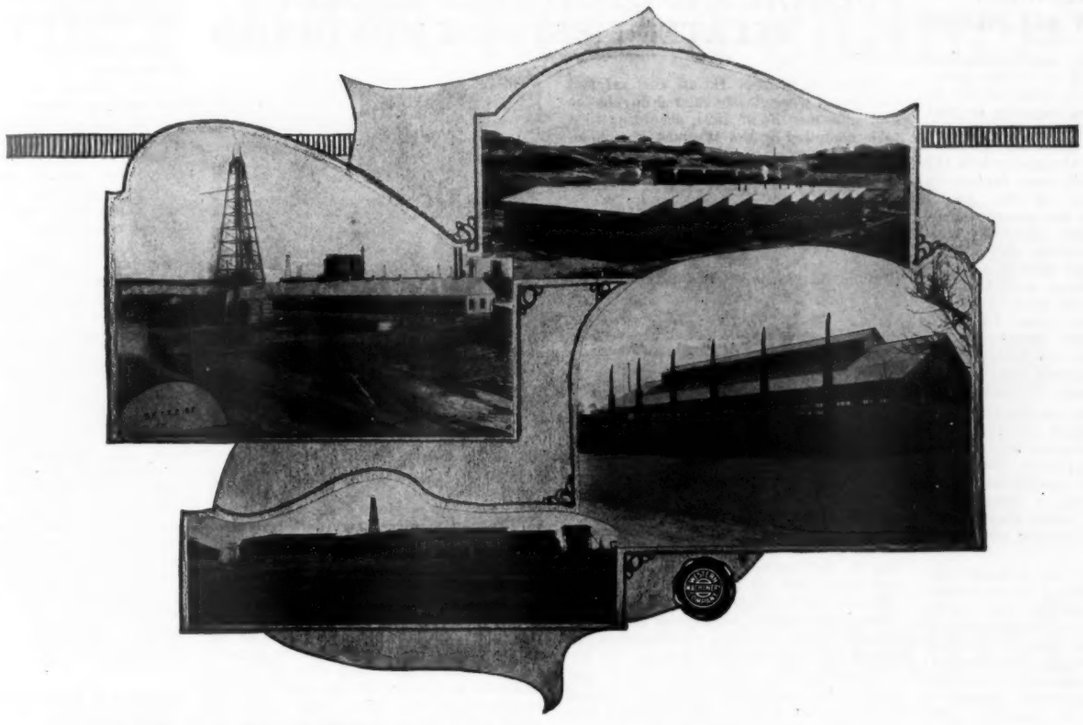
For men must work and women must weep,
And the sooner it's over the sooner to sleep,
And good-bye to the bar and its moaning.

A quarter of a century ago, when the summer fleet was in full commission, it was estimated that in the waters between Cape Elizabeth and Cape Small Point at the month of the Kennebec River, there were 250 sailing Hamptons.

Today there is a new fleet of motor Hamptons 500 strong. Gone are the sprit and headsails, gone are the centerboards whose unweildy boxes occupied the best part of the boat, gone are the sodden, sandy bags of balast and the heavy ash oars.

Gone too, are the discouraged, careworn, old-young, bent-backed, face furrowed fishermen. In their places are alert, keen-eyed, good-natured, prosperous and happy men from 20 to 50. They arise just before daybreak and in half an hour are on the fishing grounds. Only a gale keeps them ashore. Fogs, rains or dead calms have no terrors for them. Instead of two or possibly three trips a week they fish nearly every day. They make double and treble what their fathers made. And they spend it.

The marine motor has promoted sociability among the bay dwellers just as the motor car has promoted it among the farmers. Under the old sailing regime a visit to another island five miles distant was a full day's program. So the fisher folk fell into a rut and didn't visit. They became recluses. Today they are all neighborly. A run to points on the mainland, is nothing. And no one class of people has shown the effects of the broader way of living more than the fisher folk.



7,400 Horsepower of WESTERN DUPLEX GAS ENGINES

Efficient

Dependable

Power

most of them operating 365 days each year, are furnishing efficient, dependable and *economical* power in these four Compressor Plants which are located in widely separated oil fields. The four companies who own the plants are among the best known and largest operating companies in the world. They investigated "Western" Engines.

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REFINING AND MARKETING

AUSTRALIAN REFINERY TO SUPPLY ALL NEEDS

Australia is rapidly approaching the point where practically all of her petroleum can be imported as crude oil due to the increase in refining capacity in that country. A new up-to-date refinery has been installed about 3 miles west of Newport, Victoria, by the Commonwealth Oil Refineries, Ltd., which was formed in 1920 as a subsidiary of the Anglo-Persian Oil Co., and the same concern plans to erect another plant at New South Wales. Distributing plants have been established at Port Melbourne, Sydney, Newcastle, Brisbane and Adelaide, and transport facilities have been organized. The Victoria plant has been built on a site of 400 acres near the River Yarra, and the low-water depth of 28 feet at the company's wharf makes it available for the large oil tankers.

The refinery plant is complete in every detail and its operations are in accord with the most modern practice. The departments include a primary distillation plant, a light product distillation plant, a gasoline refining plant, a kerosene refining plant, a steam boiler plant, a tin and case making and packing plant, and a barreling plant.

The first of these, the primary distillation plant, consists of a pre-heater, a bench of 8 stills, and the other necessary equipment such as dephlegmators, condensers, and tanks, and is arranged for continuous distillation. The crude oil passes through the pre-heater to the first still and is then progressively heated as it passes from one to another. The series of fractions with different boiling-point ranges are drawn off, and the light distillates are sent to the second plant consisting of two horizontal cylindrical stills with dephlegmators, etc.

Preliminary refining of the distillates consists of washing with caustic soda and sodium hypochlorite solution in the washing plant, and the washed product is then further washed in such a way as to produce motor and power gasoline, with kerosene as the residual product. The light products are further treated until the requisite degree of refinement is reached, but no acid treatment is used, the sulphur impurities being removed by the hypochlorite. Further refining of the kerosene, however, is followed by a bauxite treatment, which consists of placing the prepared bauxite in the filter tanks, forming a bed through which the kerosene percolates. The resulting product is a water-white kerosene.

A tin and case-making factory is a part of the plant and has a daily capacity of 5,000 4-gallon tins and 2,500 cases.

An automatic device fills 12 tins simultaneously. An efficient conveyor system handles the tins from the time they are made until they are filled, soldered and packed ready for distribution.

Electricity is the power used at the refinery. Fuel oil is used in heating the stills and steam is admitted into the stills during the distillation.

SERVICE RECOGNIZED

John Warren, foreman of the still cleaning department of the Cosden refinery at West Tulsa, the oldest man in point of service in the entire Cosden organization, has received the first 10-year service button ever struck by the company. Mr. Warren first obtained employment at the refinery as a day laborer shortly after the plant was built and at that time his pay amounted to 28 cents an hour. On December 29 he completed his tenth year of service. The button awarded him in recognition of his service is of bronze and inscribed "Cosden & Co., Ten Years' Service." Nine other employes of the firm are scheduled to receive the award during the coming year.

FUEL OIL AND COAL PRICES CLOSELY RELATED FIRST NINE MONTHS 1924

Based on utilized B.t.us, fuel oil and coal prices were closely related during the first nine months of 1924, according to a table compiled by the Western Petroleum Refiners' Association. The table, which covers a five-year period and the first nine months of 1924 based on average monthly prices for fuel oil and coal, attempts to show the general monthly relationship in values, based on the relative number of heat units to be obtained through the expenditure of $1.

The table shows that at no time during the first nine months of 1924 were there more than 600,000 B.t.us. difference between the two products used as fuel. In March, when prices were higher than at any time during the year, the relative situation was in favor of coal to the extent of approximately 600,000 B.t.us.

It is interesting to note that this close relationship in values did not exist during the greater part of 1922 and 1923, a period in which B.t.u. values favored coal. This situation, as is clearly shown in the table, was remedied in 1924 both through an advance in fuel oil prices and a lowering of coal prices. Since September of last year, fuel oil prices generally have advanced with relatively little change in coal so it is certain that if the table were brought up to date the relative situation would now be in favor of coal.

Obviously the table could not be applied to any particular consuming section of the United States. The coal and fuel oil prices used were derived from quotations taken from several sections and for that reason to determine the relative number of heat units of coal and fuel oil for a given area it would be necessary to use the prices prevailing in the particular section where the products were to be consumed.

Following is the table and a partial explanation of the manner in which it was derived:

	Average Mine Pr. Bitum. Coal per Ton	Average Refin'y Price Fuel Oil per Bbl.	Utilized B.t.us per Dollar Coal	Utilized B.t.us per Dollar Fuel Oil
1919—				
Jan.	$2.57	$1.88	3,735,409	3,012,238
Feb.	2.49	1.60	3,855,422	3,539,379
March	2.47	1.55	3,886,640	3,653,553
April	2.43	1.44	3,950,617	3,932,644
May	2.38	1.40	4,033,613	4,045,005
June	2.40	1.37	4,000,000	4,133,582
July	2.47	1.37	3,886,640	4,133,582
Aug.	2.76	1.40	3,478,261	4,045,005
Sept.	2.91	1.44	3,298,969	3,932,644
Oct.	3.09	1.49	3,106,796	3,800,676
Nov.	2.57	1.62	3,735,409	3,495,683
Dec.	2.58	2.52	3,720,930	2,247,225
1920—				
Jan.	2.57	2.33	3,735,409	2,430,475
Feb.	2.58	2.33	3,720,930	2,430,475
March	2.58	2.88	3,720,930	1,966,322
April	3.85	2.93	2,493,506	1,932,767
May	4.59	3.24	2,091,503	1,747,842
June	7.18	3.18	1,337,047	1,780,820
July	8.24	3.12	1,165,049	1,815,066
Aug.	9.51	3.11	1,009,464	1,820,903
Sept.	8.52	3.02	1,126,761	1,875,168
Oct.	7.78	2.74	1,233,933	2,066,791
Nov.	5.87	2.44	1,635,434	2,320,905
Dec.	4.38	2.13	2,191,781	2,658,689
1921—				
Jan.	3.26	1.92	2,944,785	2,949,483
Feb.	2.77	1.44	3,465,704	3,932,644
March	2.63	1.39	3,650,190	4,074,106
April	2.62	1.39	3,664,122	4,074,106
May	2.68	1.23	3,582,090	4,604,071
June	2.52	1.08	3,809,524	5,243,525
July	2.40	1.02	4,000,000	5,551,968
Aug.	2.42	1.03	3,966,942	5,498,065
Sept.	2.37	1.04	4,050,633	5,445,199
Oct.	2.33	1.32	4,120,172	4,290,157
Nov.	2.25	1.46	4,085,106	3,878,772
Dec.	2.26	1.26	4,247,788	4,494,450
1922—				
Jan.	2.27	1.21	4,229,075	4,680,171
Feb.	2.20	1.20	4,363,636	4,719,173
March	2.12	1.17	4,528,302	4,840,177
April	2.24	1.24	4,285,714	4,566,941
May	3.10	1.26	3,096,774	4,494,450
June	3.36	1.32	2,857,142	4,290,157
July	4.67	1.29	2,055,675	4,389,928
Aug.	5.92	1.27	1,621,622	4,459,061
Sept.	5.04	1.30	1,904,762	4,356,159
Oct.	4.38	1.26	2,191,781	4,494,450
Nov.	4.11	1.21	2,335,766	4,680,171
Dec.	4.13	1.18	2,324,455	4,799,158
1923—				
Jan.	4.36	1.26	2,201,835	4,494,450
Feb.	3.59	1.34	2,674,095	4,226,125
March	3.17	1.36	3,028,391	4,163,976
April	2.79	1.32	3,440,860	4,290,157
May	2.66	1.22	3,609,023	4,641,809
June	2.64	1.17	3,779,528	4,840,177
July	2.38	1.13	4,033,613	5,011,511
Aug.	2.40	1.18	4,000,000	4,967,550
Sept.	2.40	1.14	4,000,000	4,967,550
Oct.	2.25	1.13	4,266,667	5,011,511
Nov.	2.23	1.09	4,304,933	5,195,419
Dec.	2.17	1.09	4,423,963	5,195,419
1924—				
Jan.	2.23	1.32	4,304,933	4,290,157
Feb.	2.25	1.53	4,266,667	3,701,312
March	2.15	1.46	4,465,116	3,878,772
April	2.07	1.36	4,637,681	4,194,820
May	2.04	1.29	4,705,882	4,389,928
June	2.03	1.25	4,729,064	4,530,406
July	1.98	1.24	4,848,485	4,566,941
Aug.	1.99	1.22	4,824,121	4,641,809
Sept.	2.03	1.30	4,729,064	4,356,159

H. G. JAMES PREPARING FOR A. O. M. A. SESSIONS

CHICAGO, Jan. 3.—H. G. James, secretary of the American Oil Men's Association, has taken hold of the preparatory work for the March convention of his organization and says there is no doubt the coming convention is going to receive the full support of the industry. Great interest is being shown and the program is taking shape. It has been decided to introduce several new features. One is to give the manufacturers and dealers in equipment a place on the program and addresses will be made on the new developments in handling oil by jobbers.

A part of the program will be devoted to the oil burner question and in connection there will be a special display of oil burners. The work of State organizations will be discussed and the secretaries or presidents of the various State organizations will give their views on what these State organizations can do for the oil man and the industry as a whole. Their importance is now being recognized as never before.

A feature of the banquet-dance which will be held on the second night of the convention will be the giving of a prize to some lady present. This will be done impartially through the giving of a number to each lady, the winning number to take the prize which will be the gift of the American Oil Corp., Jackson, Mich., through President A. J. Callahan. It will be something worth while, a diamond ring or wrist watch.

NO ARRANGEMENTS YET AS TO SKIMMING PLANT

FORT WORTH, Tex., Jan. 3.—Officials of the Big Lake Oil Co. state that no definite arrangements have been made as yet for the establishment of a skimming plant in the Reagan County Field. Plans for such a plant have been under contemplation for several months but no definite decision will be made until it is determined whether or not the amount of oil produced in the field exceeds the requirements of the Reagan County Crude Purchasing Co., which will be handled through the Humble Oil & Refining Co.'s pipe line. The survey for the line has already been started from Kemper.

The Reagan County Crude Purchasing Co. is erecting storage at its tank farm and the Big Lake Oil Co. already has 12 55,000-bbl. tanks up or building. The skimming plant under contemplation will probably have a capacity of 3,000 bbls. daily and will cost approximately $150,000.

The Orient Railroad plans to change its locomotives from coal to oil burners, with estimated fuel requirements of 2,500 bbls. daily, and this fact may influence the building of a skimming plant.

INCREASES CAPITAL STOCK

AUSTIN, Tex., Jan. 3.—The Galena-Signal Oil Co., of Houston, Tex., filed an amendment to its charter, increasing its capital stock from $7,500,000 to $12,000,000.

INCREASE CAPITAL STOCK TO PURCHASE PRODUCTION

CHICAGO, Jan. 3.—The Johnson Oil & Refining Co., since issuing the additional million dollars of capital stock has acquired leases and pipe lines connecting the production with its refinery at Cleveland, Okla., which make it a complete organization. It produces, transports, refines, compounds, markets and jobs petroleum products through a list of 100 filling stations and some subsidiary companies.

In a letter to the stockholders announcing the increase in capital stock from $3,000,000 to $4,000,000, Homer Johnson, president, states: "The purpose of the issue of $1,000,000 preferred stock is to purchase property that is producing crude oil, to make the company completely self-sufficient, an integrated whole."

This stock is not to be put on the market but will be subscribed for by the officers of the company, the employes, and some friends or relatives of the stockholders. A large part of the issue will be set aside for the employes to purchase on the installment plant. The company has 600 employes of which 200 are already stockholders and share in the profits. The officers of the company are Homer M. Johnson, president; James J. Johnson and L. R. Johnson, vice presidents; I. H. Johnson, secretary-treasurer. All are brothers and referred to by the president in his letter to the stockholders as the "Johnson Boys."

CASPER SUPERINTENDENT SUCCUMBS TO PNEUMONIA

CASPER, Wyo., Jan. 3.—Fred D. Capen, superintendent of the refinery of The Texas Co., at Casper, died of pneumonia at his home here early this morning after only five days of illness.

Mr. Capen came to Wyoming from Houston, Tex., in 1922, when The Texas Co. decided to put a refinery at Casper. He was then superintendent of construction and he had charge of the building of the plant here. Upon its completion he was placed in charge of the plant, making Casper his home. He recently went to Texas and there contracted a heavy cold that developed into pneumonia and resulted in his death.

Mr. Capen was 32 years of age and is survived by his parents, his widow and a 5-year-old son.

SILVER BOW REFINING TO BUILD BUTTE PLANT

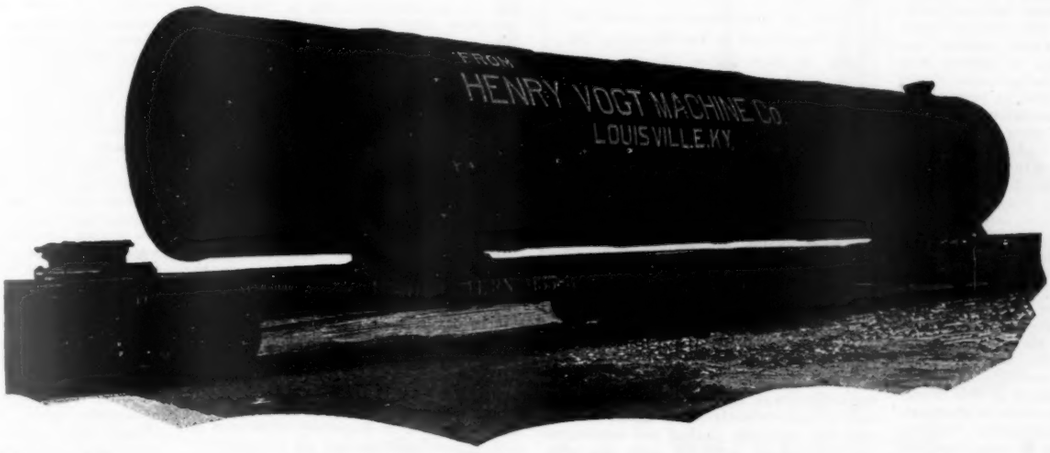
CASPER, Wyo., Jan. 3.—The Silver Bow Refining Co. is starting the erection of a new refinery at Butte, Mont. This refinery will have an initial capacity of 150 bbls. daily and is to receive its crude from the Cat Creek Field. It will by a skimming plant to make gasoline, kerosene and fuel oil.

The use of fuel oil for domestic purposes in Montana towns and cities has grown large since the fields there have opened and small refining plants find it profitable to operate for the production of gasoline and fuel oil for local markets. The gasoline pays the cost of refining usually while the kerosene and fuel oil represent the profit.

TO MANAGE GREAT SOUTHERN

SHREVEPORT, La., Jan. 5.—Frank P. Walsh, who has had 26 years of refinery experience, including service with the Gulf Refining Co., the Standard Oil Co. and the Galena Signal Oil Co., and who is one of the best known refinery superintendents in this territory, has accepted the management of the Great Southern Refining Co. The plant has been closed down for about 15 days preparing to reopen with 3,000-bbl. capacity under the supervision of Mr. Walsh.

They didn't take a chance



Vogt Stills were ordered

SPECIFICATION

Size — 10′ dia. x 60′ long

Plate Thickness — ⅜", 1" and 1⅛"

Rivets — 1¼" swelled neck

Operating Conditions — 100 lb. @ 800° F.

Test Pressure — 225 pounds

Shipping Weight — 107,500 pounds

Low carbon open hearth still-bottom steel.

Edges of all plates machined on plate planer — not bevel sheared.

Circumferential joints assembled by expansion and contraction method.

Rivet holes drilled from solid plates after assembly.

Seams electrically welded inside and outside — instead of calked.

THE men responsible for the purchase of equipment at this large eastern refinery knew that they could not afford to buy other than the best. They realized that destruction of property and loss of life frequently result from apparently slight defects in such high pressure and high temperature stills.

They also realized that every so-called boiler shop is not competent to build stills — that special equipment and an organization trained up to that high grade workmanship (see specification) is necessary to produce stills that will not require frequent and expensive repairs to keep them tight. This is another reason why they ordered Vogt Stills.

And they didn't take a chance upon costly delays in their construction program due to failure of the manufacturer to complete the stills as required. They were confident, when they signed the contract, that the stills would be completed as specified. Their confidence was not misplaced. The promised shipment was anticipated almost three weeks.

HENRY VOGT MACHINE CO.

Incorporated

LOUISVILLE, KENTUCKY

Branch Offices: NEW YORK, CHICAGO, PHILADELPHIA, DALLAS

Manufacturers of Oil Refinery Equipment, Water Tube and Horizontal Return Tubular Boils: Drop Forged Steel Valves and Fittings, Ice Making and Refrigerating Machinery.

Vapor Pressure in Gasoline Movement

Practical Problem Confronts Natural Gasoline Industry During 1925. Methods of Determining Vapor Tension Explained

A PROBLEM FOR 1925

In the accompanying article H. L. Shoemaker of the Standard Oil Co. of New Jersey discusses the recent investigations in regard to the methods of determining the vapor pressure of gasoline for transportation classification. This is one of the most important problems which confronts the natural gasoline industry during 1925. Mr. Shoemaker explains all the methods which have been used or proposed during the past two years and outlines the problem as it faces the industry today.

In 1921 pursuant to the agreement then made with the Interstate Commerce Commission, the American Petroleum Institute appointed a special technical committee to determine if any change in the method of measuring vapor tension was desirable. The Bureau of Mines was directed to make an independent study of this problem and asked to present its conclusions to the commission.

In January, 1922, after six months of exhaustive study and experimental work, the final report of the special committee was presented by the institute to the commission. This report gave the conclusions of hundreds of tests, and the entire industry was represented in their compilation. Approximately 1,000 tests were made in the Mid-Continent Field alone, from practically every district, on various gasolines. The National Petroleum Association, the Western Petroleum Refiners' Association, the Natural Gas Association of America, and the Association of Natural Gasoline Manufacturers were all represented in this work, and these organizations were in thorough agreement with the conclusions reached.

It is also interesting to note that the Bureau of Mines, who conducted its investigations to a large measure independently, agreed with the conclusions reached by the experts of the industry.

The Conclusions Reached

Briefly, these conclusions were, that while the new method might be more simple than the old method, it was definitely determined that the correction factor of 0.15 pound per degree is so inaccurate as to be impossible of application. It also found and recorded a wide variation between results obtained under the proposed and the old method. It was also brought out that substantially all the accidents which have occurred in the shipment of casinghead or natural gas gasoline have been directly traceable to instances where the existing regulations have been violated, one of the principal causes of accidents being carelessness in the removal of dome covers of tank cars, before properly venting and relieving internal pressure.

In considering this question of method at that time there was developed an entirely new method, suggested by Dr. R. P. Anderson, which it was felt had sufficient merit to justify its consideration. It was recommended by the industry that the Anderson method, as well as any other method that might be developed, be thoroughly investigated and that pending such complete investigation the then existing method of taking vapor tension should be kept in use. It was further submitted that since a correct and accurate method of determining vapor pressure is fundamental to the entire theory and practice of developing regulations for the safe transportation of natural gas gasoline, the first and logical step is therefore to find a correct method.

The Anderson Method

The Anderson method may be briefly described as follows:

The apparatus employed was a modification of the standard bomb, in such a manner as to permit of securing vapor space in the bomb free from air, without losing any of the volatile constituents of the gasoline. A ¼-inch connection was made near the bottom of the bomb and a ¼-inch pipe extended up along the side of the bomb, and a cup and ¼-inch needle valve attached to it. The bomb is filled to capacity, with the needle valve open, the gauge inserted, and the needle valve closed. The bomb is then lowered into the water at the proper temperature and as pressure is developed the needle valve is opened and the cup allowed to fill with gasoline from the bomb. The volume of the cup is about one-tenth of the volume of the bomb. Later, on account of the time element required to heat the gasoline sample in the bomb to a uniform temperature without shaking, the form of apparatus was further modified to permit of conveniently mild agitation. It was felt that this method and apparatus would be more accurate than the ordinary method, in view of the fact that a means for agitating the liquid is provided which more nearly resembles actual conditions in a tank car; and since no air is trapped above the gasoline, hence, pressure due to expanded air in the apparatus is thus eliminated and the observed pressure is thus more nearly the vapor pressure of the material under examination. The Anderson method will give the same pressure as that developed in a tank car at any particular temperature when the space above the gasoline in the tank car contains only gasoline vapor, a condition which obtains when a car is loaded with gasoline at its initial boiling temperature or when all of the air has been eliminated through the safety valve as pressure is built up through rise in temperature after loading.

It might be noted, in general, that as gasoline becomes wilder in nature and more dangerous to ship, the amount of air in the space above the gasoline in the car becomes less, and in the case of gasolines that are actually boiling as they are loaded into the car, there is no air whatever. It is thus evident that as the wildness approaches the limit set for shipment under prescribed conditions, the pressure developed in a car at a certain temperature approaches the true vapor pressure at the same temperature, and consequently the true vapor pressure is the best criterion of the fitness of the gasoline for shipment under these conditions. It might be pointed out here that during the discussion at this time the Bureau of Mines suggested that a distillation test be used to indicate the characteristics of the material shipped in tank cars. This being essentially a laboratory test, it was not believed that it would be at all practicable as a field routine test.

After the presentation of the above conclusions to the Interstate Commerce Commission in January, 1922, the Bureau of Explosives, in February, expressed its willingness to withdraw its recommendations for a modification of the present method, pending further investigation of the Anderson and other methods. In March and April, 1922, further conferences were held between the Institute, the Bureau of Explosives, and the Bureau of Mines, to further the progress and collect information regarding the application of the Anderson method.

Further Tests Made

Pursuant to the agreements thus reached, the industry proceeded during the next 18 months to make further tests on various kinds of gasoline in different sections of the country, comparing the results as indicated by the old Bureau of Explosives' method with the results as given by the Anderson apparatus, and to determine what values should be set for the Anderson method as the upper limits of vapor pressures for shipments in ordinary and insulated cars. Hundreds of experiments were made and the date thus obtained forwarded to the American Petroleum Institute. A study of this test data, comparing the Anderson apparatus with the Bureau of Explosives' apparatus, indicates that there is no uniform difference in the results obtained. Many companies report consistently higher results when using the Anderson apparatus, whereas the conclusions of other observers indicate that the Anderson apparatus gives slightly lower results. Also, some companies report that the Anderson apparatus gives more accurate results, and other companies give a difference of opinion among their own experts as to which apparatus is the more accurate and gives the most concordant results.

At a meeting of the Special Technical Committee of the Institute, held in Chicago in July, 1924, results and conclusions up to that time were thoroughly discussed. It might also be mentioned that recently the Association of Natural Gasoline Manufacturers have offered an association prize of $500 to any individual who develops a satisfactory apparatus for measuring vapor tension, that shall be deemed an improvement over any apparatus in use to date, this being done to promote greater interest in this matter, and with the hope that the operating men directly engaged in this work may be encouraged to participate in the practical working out of these problems.

No Definite Answer

The progress and conclusions up to July, 1924, indicated clearly that the test data was not sufficient to draw any definite conclusions as to the relationship between the two methods, nor is the data sufficient to apply temperature corrections to the Anderson machine. It is unfortunate that the majority of the data collected was taken during summer months or in localities where temperatures above 60 degrees Fahrenheit prevail. Sufficient data, however, have been collected during the colder weather to demonstrate the wider variation at low temperatures, as compared with the high temperatures. It was felt, therefore, that it was not possible, in view of these widely varying results, to give a definite answer to the problem.

The two separate features to be considered are:

1. That the most accurate apparatus be selected.
2. That the method of operation of the chosen apparatus be such that the product shipped shall be a safe one.

It is important also that if the method of testing is changed, the quality of the product slipped today as safe shall not be changed. The industry most certainly does not wish to adopt an upper limit of say 12 pounds or any other figure as being the correct specification to insure safety and curtail production to meet this, without being very sure of the absolute correctness of this upper limit figure.

Making Further Study

Therefore, it was agreed in July, 1924, that cooperation be continued between the American Petroleum Institute and the Bureau of Explosives, and that further study of this entire question be carried out by a commission consisting of one representative from each of the following organizations:

Bureau of Explosives.
Bureau of Mines.
Association of Natural Gasoline Manufacturers.
American Petroleum Institute.

This commission is to work under the general direction of the American Petroleum Institute and to make recommendations as to the best practical apparatus for determining vapor tension and how

(Continued on Page 118)

INDUSTRY BEGINNING TO REALIZE SCIENTIFIC RESEARCH NECESSARY

By Charles E. Kern

WASHINGTON, D. C., Jan. 3.—The necessity for scientific investigation of the many problems that have a direct or indirect bearing upon some branch of the oil industry is constantly taking a stronger hold upon many people who have come to a realization of the importance of such study. There is a consensus of opinion that if the energies of the thousands of trained scientific investigators could be organized and directed toward solving the unknown problems that now baffle them, the United States would be kept far ahead of all the nations that are striving for supremacy in such achievement.

To the oil and natural gas industries scientific investigation offers a particularly alluring field of action both in making these industries more profitable to the men engaged in them and to the country at large. In no branch of science are there more highly qualified men to achieve success than in these industries. These men as a rule are today working in isolation and with only lukewarm support in the matter of funds for carrying out their ideas. In many instances they are duplicating research. Because of limitations placed upon them, they are unable to carry their theories far enough by experiment to arrive at any satisfactory conclusion. What they need is national organization, intelligent coordination and reasonable financial backing to make their efforts effective in a conspicuous degree.

Lack of Support

The lack of support that has hampered the efforts of these investigators has been due largely to the failure of nontechnical people to comprehend the practical importance of their work. Business men are often so engrossed in the immediate difficulties that confront them that they have neither time nor inclination to consider the value of scientific achievement that is not immediately applicable to their work.

Dr. Van H. Manning, formerly director of the Bureau of Mines, later an official of the American Petroleum Institute and at present in private employ, is one of the men who have stressed the importance of more knowledge of the fundamentals that relate to petroleum. It is well known here that when he left the service of the Government to go with the Petroleum Institute his pet thought was that that institute would formulate, direct and provide funds for extensive investigation that would open the door of knowledge leading to hundreds of un-

(Continued on Page 114)

Use It With Air or Hand Pump or Both

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2 Auxiliary pressure tank with a factor of safety beyond that of the ordinary filling station air tank. Also expertly welded and tied to bottom of storage tank.

3 Dished heads—standard construction on Columbian underground storage tanks—a factor which gives them strength not common to underground tanks of even heavier steel. Auxiliary pressure tank also has dished heads.

4 Two and one-half inch fill pipe, 36 inches long.

5 Four-inch pipe, 36 inches long, through which inlet valve to pressure tank may be removed for cleaning.

6 Feed line which conducts gasoline from pressure tank to tower container. Ends 1 inch above bottom of tank to prevent picking up bottom settlings.

7 Feed line to which hand operated rotary pump may be attached. Takes gasoline direct from storage tank. Does not interfere with air operation.

8 Air line through which air pressure is applied to auxiliary tank. (See also 10).

9 Clean out line. Extends to within one-half inch of bottom of pressure tank. By opening it, closing 6 and applying air through 8, bottom settlings are forced out into the open air.

10 Spud for attaching drain-back line permitting draining of tower container back into storage tank. This line and air line may be connected with a three-way by-pass valve, the operation of which drains the tower container back through line 6, into the pressure tank, up through line 8, through the by-pass valve and into the storage tank through line 10.

11 Spud for attaching vent pipe extending up into the air. 11a Double goose-neck type vent which may be attached to 11.

12 Extra 4-inch spud with plug. Foot valve may be inserted through this in the event foot valve type of pump is used.

13 Welded-on elbow fill pipe through which pressure tank is filled with gasoline and into which is fitted one-way valve.

14 One-way inlet valve which opens automatically when pressure on auxiliary tank is released. Through it the auxiliary tank fills with gasoline by gravity.

15 Rod attached to housing of inlet valve and extending up through 4-inch pipe. With this rod the valve housing may be unscrewed from auxiliary fill pipe and lifted out through the 4-inch pipe in the event it should ever need attention.

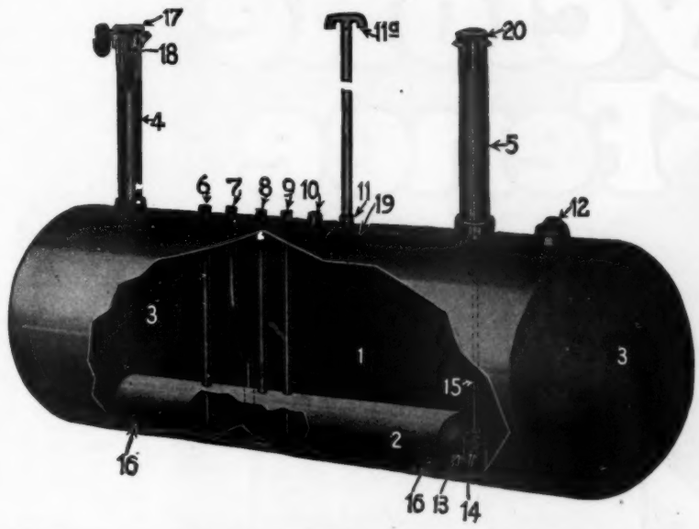
16 Steel straps which are welded to the auxiliary tank and to the bottom of the storage tank. Holds them together as a single unit.

17 Hinged cap atop the fill pipe. Has padlock arrangement.

18 Fine mesh strainer and fire screen fitting within the fill pipe.

19 Underwriter's label signifying that the Columbian Combination Underground Tank has been tested and approved by the Underwriter's laboratories.

20 Screw-on cap for 4-inch pipe provided for removing inlet valve to auxiliary pressure tank.



You too Will Like It

HUNDREDS of oil distributors swarmed the Columbian exhibit at the Tulsa show to inspect the "Cow and Calf" Tank. Many of them came back the second and third time to study it. Not a one left without expressing his appreciation of this new Columbian invention. Without doubt it was the most popular equipment attraction for oil distributors at this great International show.

One Chief of Distribution for a large oil company sent more than a score of his men to look it over and report to him. Their unanimous report was "Chief, buy us 'Cow and Calf' tanks for our underground storage and nothing else."

Already, manufacturers of air operated pumps are adopting the "Cow and Calf" tank as a standard unit of their systems.

What is the "Cow and Calf" tank and what does it do?

Briefly, it is a high grade, all-welded, dished head Columbian underground storage tank into which is built the auxiliary air tank necessary for the operation of air systems. It eliminates a separate air tank. It combines the storage and air tanks in one unit.

It is a combination tank in more ways than one. Besides air operated pumps it will handle hand operated pumps of the rotary or foot valve type. It will handle any one, any two or all three types simultaneously without interference, one with the other. How does it do it? Read the full details in the column to the left.

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Bulk Station Tanks

Underground Tanks
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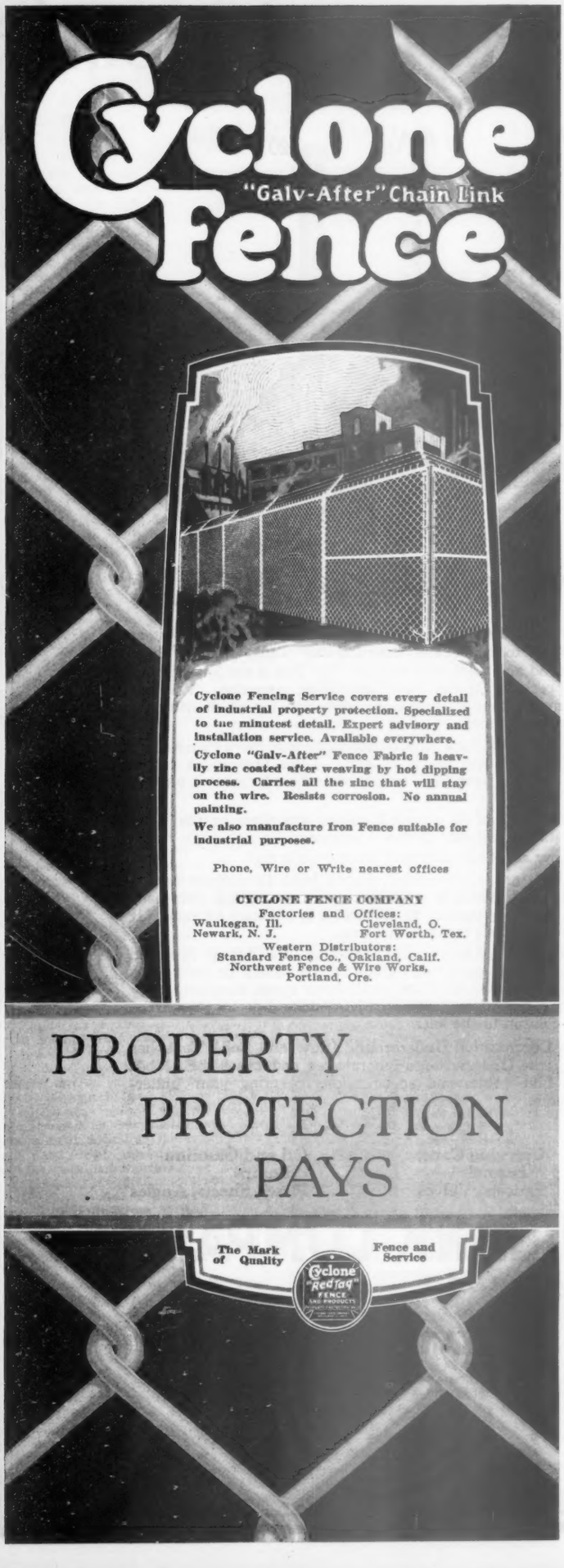
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CHICAGO DISTILLATE DEMAND GREAT

Many Distributors Took a Chance on This Part of Their Business and the Chance Went Against Them. Difficulties to Be Met by Manufacturers and Oil Men. Gasoline Helped by Slow Transportation. Fuel Oil Advancing

By J. B. Waldo

CHICAGO, Jan. 3.—The activity in the Chicago market is in fuel oils and distillates. The demand for the latter has simply been too great for many of the distributors and the ones least prepared have been unable to maintain stocks of distillates and keep up with the demand from their customers. In this part of their business many concerns have taken a chance and the chance has gone against them. There has been bitter complaint from consumers who have been unable to secure the supplies badly needed during the recent cold waves. With the temperature at 17 to 18 degrees below zero the oil burner will run all the time to keep up the required temperature and the consumption has in some instances been as great in a week as was counted on for two, three or even four weeks. The larger concerns with their own refineries have not all of them been able to do much better than some of the larger independent distributors as the latter had connections with many sources of supply while the refinery-distributor depended on its own plant. The delay in tank car transportation has been very great. Just when the tank wagon deliveries were largest the receipts by tank car were held back by the bad weather conditions and the supplies in storage seem to evaporate. Some of the smaller concerns have just about been given up as hopeless by their customers who are turning to the older and better equipped concerns for their supplies of oil. In this case the customers of the oil men are learning again the lesson that the lowest price may not secure satisfactory service.

There have been a great many cases where for one reason or another the burners have not worked properly, if at all, and of course the burner people are blaming the oil men. There are several cases where the oil delivered was right in line with the specifications of the burner but the result was not good under the strain of severe cold. Some of the oil men hazard the guess that an oil that has been exposed to sub-zero weather even if warmed in tanks and delivered hot from the tank does not act the same as when it has never been thoroughly chilled. There may be something in this. At any rate there is a possibility that such might be the case and it seems to explain some of the troubles that have beset the oil industry in connection with the furnishing of fuel for domestic burners.

Difficulties to Be Met

Evidently there are many matters yet to be worked out before the burners and the supply of oil are entirely adjusted. There must be greater cooperation between the burner makers and the oil industry. Each needs the other; the burners must have oil and the oil men will find in the burners a steady demand winter after winter. Both should take hold of any difficulties that arise and find out what is wrong and adjust the trouble. But this much is found to be the case many times, that burners specified to use a certain oil and yet give trouble, work perfectly when given a lighter fuel. Some oil men are not delivering 30-32 fuel oil as specified but gas oil as they have found that the latter gives so much less trouble they can afford to do this at the present range of prices.

Another matter that must be given serious consideration is the question of storage and equipment. Perhaps the better way to put it, the problem is of securing a steady delivery or a better balanced delivery. The present tendency is towards a rush of business that taxes the forces of the oil men for a week or so and then a period when there is so little demand that the very tank wagons that were being rushed out long after hours and on Sundays after being on the go all day, driven like a fire engine going to a 4-11 alarm, are practically idle for days. One of the adjustments the oil men see they must have is larger storage tanks in the homes. One oil company stated it now believed that next season it would make contracts to keep the storage of only such customers filled as had at least 500-gallon tanks.

If there is to be such a marvelous growth in the number of oil burners as predicted by the burner manufacturers the quantity of oil required must be run through the year. There would not be a sufficient refinery output to meet the demand during the period of use. The consumption during the summer months will be small. There are some forms of light manufacturing or of service that can use the domestic burner to good advantage the year round such as laundries, small bakeries and the like but the total consumption by them will be small. The consumer will be as reluctant to store oil as he is coal, if not more so. Coal does not require tanks but just a cheap coal bin. It is odorless and oil is not. Then a supply of oil is rather more expensive than coal. The problem is very different from that of supplying heavy fuel oil to industries and the question as to whom and where the stocks of oil are to be carried may prove an obstacle to the extension of the use of the burner to some degree. However, it will be some years before the number of burners named by the manufacturers as the probable total in use will be reached. As in the case of the gasoline supply there will be found a way but it will not be as easy as the gasoline question for the demand for gasoline is year round with the consumption during the summer about one-third larger than in winter. At present the consumption of domestic burner fuel of all kinds is not 10 per cent in summer what it is in the winter.

Gasoline Stimulated

The gasoline demand was stimulated locally by the slow transportation during the last week in the year and most if not all of the owners of December deliveries got out of the month with little trouble. There was even a slight premium for cars on the tracks at times. The consumption is seasonable in the cities although reduced by the bad weather but in the country districts the demand is light and business very slow. Heavy snows have been common. Sub-zero weather has been usual and the result has been bad roads and little auto traffic. The demand for Navy has been less in its usual proportion than for the higher gravities which are wanted during such weather. Some of the larger jobbers who specialize on high grade gasoline using either the 60-62 or the 64-66 as the case might be have been in the market for considerable quantities. The supply has been adequate and the tendency has been toward weaker price to the end of last month when 7½ cents was quite common for Navy at the plants and little if any sold at over 7¾ cents to the trade.

The first couple of days of the new year have not brought any increase in the demand in the spot market but for several reasons jobbers are asking for prompt deliveries of their January takings on contracts. A rumor that a tank wagon advance is impending may have had something to do with this condition. It is hard to see any other valid reason why a jobber who has fair to large supplies, as most have and no particular demand, should ask to have gasoline delivered that could have been held for 30 days in part at least.

(Continued on Page 96)

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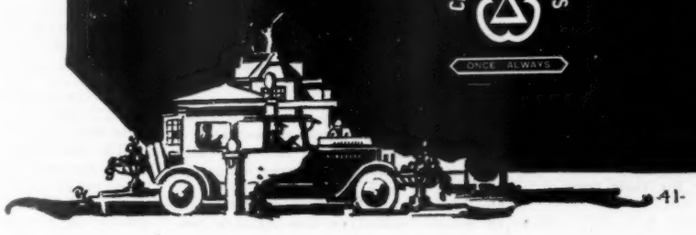

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EASTERN REFINED MARKETS FIRM; NO IMPORTANT PRICE CHANGES

By N. O. Fanning

NEW YORK, Jan. 3.—Firmness ruled the Eastern refined oil markets during the past week. No price changes of importance were recorded. Consumption held up unusually well, particularly of gasoline and lubricating oils.

One feature of the week's developments was a speeding up in oil refinery operations. There was also a heavy movement of crude oil to Eastern refineries. The surprisingly heavy consumption of all oil products has undoubtedly resulted in a shortage of stocks not for immediate use but for the heavy seasonal demand expected next spring. Refiners realize the need of preparing for that period now, and the large current movement of products into consumption has left them with lower stocks than they had anticipated.

An indication of the situation is found in the fact that receipts of crude and refined oils at Atlantic ports during the last week of December averaged 681,000 bbls. daily, according to The Oil and Gas Journal's estimate. This weekly figure was only exceeded once before this year, 692,000 bbls. daily having been received during the week ended August 13.

While the weekly figure is not particularly indicative, the average receipts for the month of December, according to preliminary estimates, amounted to 500,000 bbls. daily, against 476,000 bbls. daily in November. December receipts were the largest since August.

Another highly significant fact in connection with receipts of oil at Atlantic ports (largely at refineries) is that receipts from the Gulf Coast shipping points during December showed a considerable gain over those for October and September, and were fairly close to being equal to the July movement, which averaged 318,000 bbls. daily. Receipts from the Gulf during the last week of December averaged 402,000 bbls. daily. While receipts from the Gulf have increased recently, receipts from both California and Mexico have steadily tended lower.

Big Buyers of Crude

When it is remembered that the Atlantic Coast group of refineries constitute one of the largest markets for crude oil in the country, being able to handle 500,000 bbls. daily, the foregoing figures take on added importance. The largest part of the receipts of oil by water consists of crude, with fuel oil second. The amount of gasoline, kerosene and lubricants imported in bulk is almost negligible.

The gain in receipts from Gulf Coast ports is believed to herald the entrance of Atlantic Coast refiners into the Mid-Continent market on a bigger scale than ever before, both as buyers of crude oil and of fuel oil, the latter product being in heavy demand on the Atlantic seaboard during winter months.

Export Situation Favorable

With the domestic refined oil situation here comparatively quiet, refiners are turning more attention to the export market, which forms such a large part of their business. December was one of the record months in the exploration of oil products from New York.

While no advance in prices took place, the tone of the market is firm, and no doubt new business done during the first month of 1925 will be at higher levels.

Bulk shipments of gasoline and kerosene from New York during the week ended December 31 were heavy, amounting to more than 10,000,000 gallons for the two products combined. Gasoline bulk exports amounted to 4,107,884 gallons, kerosene 6,092,992 gallons.

The "La Harba" left for Germany with 2,102,332 gallons of kerosene and 1,092,054 gallons of gasoline. Other bulk exports included the "Aarhus" with 659,698 gallons of gasoline and 1,403,804 gallons of kerosene for Denmark; the "Supergas" with 1,552,566 gallons of kerosene and 1,063,029 gallons of gasoline for Sweden, and the "Wellfield," carrying 1,293,103 gallons of gasoline and 1,034,290 gallons of kerosene consigned to French ports.

Tanker Charters

Fixtures in the oil tanker chartering market were numerous during the week, and rates were stiffer. The following fixtures were reported:

Tanker Antietam, January-February loading, 8,000 tons of fuel oil, United States, Gulf to West Italy, 31s. 6d. per ton.

Tanker Pennsylvania Sun (Am.) 90,000 bbls. light crude from Gulf to New York, at 26 cents per bbl.

Tanker Paul Paix (Fr.) cargo of refined petroleum from Gulf port to France, at 33s. 6d. January loading.

Tanker Bussam (Du.), January-February loading, 100,000 cases of kerosene, basis 1 shilling, Minatitlan (Mexico) to Brazil.

Principal Exports

The following table shows principal exports of petroleum and petroleum products from New York reported during the past three weeks (figures in gallons unless otherwise noted):

Item, How Shipped—	Week Ended Dec. 31	Dec. 24	Dec. 17
Gasoline:			
Bulk	4,107,884	1,276,751	.....
Cases	1,395,500	3,156,530	330,000
Kerosene:			
Bulk	6,092,992	3,995,417	.....
Cases	839,990	5,599,560	628,420
Lub. oil:			
Bulk	.....	582,683	.....
Barrels	637,602	909,342	539,400
Cases	50,080	274,440	43,680
Lub. greases:			
Barrels	.....	905	.....
Paraffin wax:			
Bags (lbs.)	842,160	3,724,380	866,300
Barrels	980	2,201	1,902
Pet. asphalt:			
Barrels	.....	1,171	.....
Crude oil:			
Barrels	3,855	3,375	1,200

Cased exports of gasoline and kerosene showed a slight decline after the heavy movement of the week ended December 24. Much cased oil now being shipped is bound for South American ports—principally Argentina, Uruguay and Brazil.

Oil Receipts Heavy

As already pointed out, oil receipts during the week ended December 1 were very large, being estimated at 681,000 bbls. daily. This contrasts with an average of 361,000 bbls. during the week ended December 24.

Receipts from Mexico were quite heavy after the stagnant week preceding. Imports (all from Mexico except a shipment of oil from Curacao) averaged 176,000 bbls. daily, against only 19,000 bbls. the week before.

Receipts from California are estimated at 103,000 bbls. daily, against 89,000 bbls. during the week ended December 24.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic ports from Gulf and Pacific Coasts of the United States, and imports, for the last three weeks; also monthly record for the last 13 months (figures in barrels):

	Week Ended Dec. 31	Dec. 24	Dec. 17
Gulf Coast	402,000	253,000	291,000
Pacific Coast	103,000	89,000	66,000
Imports	176,000	19,000	62,000
Total	681,000	361,000	419,000

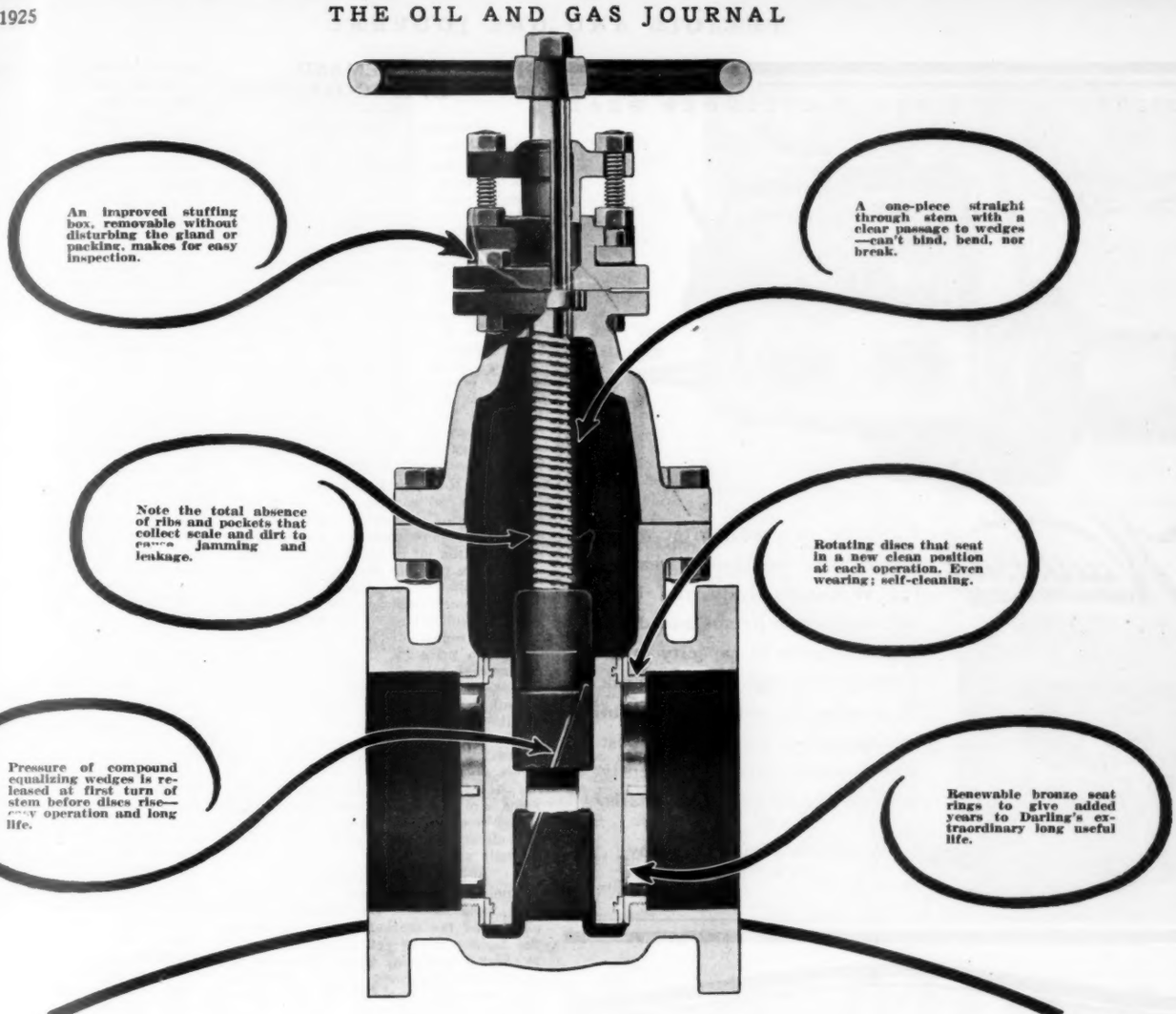
Daily Averages by Months

	Gulf	Pacific	Imports	Total
Nov., 1924	246,000	80,000	150,000	476,000
October	246,000	120,000	88,000	454,000
September	270,000	104,000	101,000	475,000
August	310,000	127,000	84,000	521,000
July	318,000	85,000	114,000	517,000
June	302,000	133,000	136,000	571,000
May	276,000	122,000	144,000	542,000
April	262,000	143,000	123,000	528,000
March	201,000	137,000	130,000	468,000
February	174,000	175,000	108,000	456,000
January	127,000	159,000	79,000	365,000
Dec., 1923	184,000	153,000	119,000	456,000
November	186,000	141,000	110,000	437,000

Imports are largely from Mexico, with an occasional shipment from Peru, Trinidad or Venezuela.

OPPOSES MORE TEXAS TAX

AUSTIN, Tex., Jan. 3.—State Senator-elect J. D. Parnell, of Wichita Falls, says he will oppose in the Legislature any proposal looking to any increase in the 2 per cent gross production tax on crude oil, and intimated he will also oppose increasing the gasoline tax from 1 to 3 cents per gallon.


An improved stuffing box, removable without disturbing the gland or packing, makes for easy inspection.
A one-piece straight through stem with a clear passage to wedges —can't bind, bend, nor break.
Note the total absence of ribs and pockets that collect scale and dirt to cause jamming and leakage.
Rotating discs that seat in a new clean position at each operation. Even wearing; self-cleaning.
Pressure of compound equalizing wedges is released at first turn of stem before discs rise—easy operation and long life.
Renewable bronze seat rings to give added years to Darling's extraordinary long useful life.

All You Want in a Valve is in a Darling

Long life, easy operation, accessibility, quick repair, low ultimate cost—you get them all when you equip with Darling Valves. These qualities are not vain promises of the manufacturer, but the natural advantages of Darling's design and construction.

Study the important points of Darling Valves as pictured above and see if they don't tie up with your idea of how a valve for oil field work should be made. Most Old Timers have shown their approval of this construction by insisting on Darlings only.

DARLING VALVE & MANUFACTURING CO.
Williamsport, Pa.

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Mid-Continent Distributors

Frick-Reid Supply Company
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International Supply Company
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California Distributor

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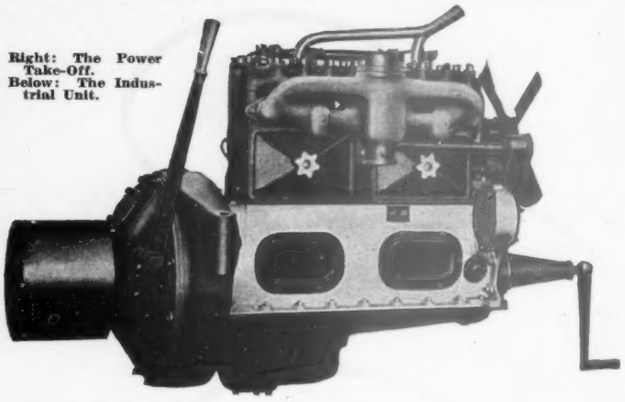
200

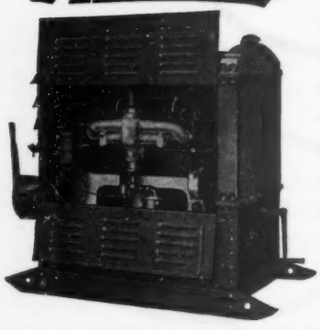
DARLING
GATE VALVES

EQUIPPED WITH RICARDO CYLINDER HEAD

Right: The Power Take-Off.
Below: The Industrial Unit.



Waukesha
TRADE MARK



Day after day, week after week, month after month—for years—the Waukesha Industrial Unit will keep your pumps and drilling machinery at capacity operation, giving you the very peak of productive return from that machinery—at an operating cost that is—and stays—consistently low. Write for complete details.

Waukesha Motor Company
Engine Builders
Waukesha, Wis. New York City

Let Longyear diamond drill contractors *core drill* your oil structure
Consult us on your drilling problems
E. J. Longyear Company
Minneapolis, Minnesota, U.S.A.

DISTILLATE DEMAND IN CHICAGO GREAT

(Continued from Page 92)

Refiners are offering Navy gasoline at 7½ cents over January and some business has been done but most of the marketers are out of the gasoline market right now and are "straddling the market" covering their orders as they get them. Some report they have been offered 7¼ cents but this is below the price made by most refiners trying for January orders. The price at which the gasoline is being offered by refiners means a 7¾ to 8 cents range in the market, the latter if business is fairly good for the season and the former if the weather is as bad as it has been or was last week. All agree with few exceptions that it is not a time to speculate, although there are some who claim to be "bulls on gasoline." They figure refiners will cut their runs to the demand.

Kerosene Improving

Kerosene is working towards a little better position. There is about as much demand as there was, not much if any more, but the oil is not being run. Many refiners are running the kerosene in with their distillates and the change in the flash of some distillates from around 185 to 155 is indicative of what is being done by many refiners. They can get almost as good a price for the distillate as for the refined oil. The market is quoted by some at nothing less than 4½ cents but others are content to accept 4⅜ cents for the 41-43 gravity.

Distillates have been generally mentioned. The demand is very active and prices are advancing with the 38-40 selling at 4⅛ and the 37-39 at 4 cents. Some are asking ⅛ cent more while others are holding their present prices but all state the tendency of prices is strongly upward.

Fuel Oil Advancing

Fuel oil has advanced to quotations that were thought the possible top by many and the market is very strong at the highest prices yet quoted with sales at these prices being made. Many of the agents have neglected buying while busy with inventory work and these are now getting their quotations and in many cases they have been so out of touch with the market tendencies they can hardly believe their sources of supply really mean the prices they quote. One thing that has added strength to the market has been the ending of many contracts, some of which were made six months ago and called for very low prices for both Smackover and refinery fuel oil compared with the present market. Some contracts were for 90 days and the new prices are decidedly higher and even the buyer over the month will find his January purchases will cost him a substantial sum over December.

There are some oil men rather inclined to call a halt in the constant advancing of the market but they are in the minority. One reason for doubting further advance in the market is the claim that the January orders are about all placed and there is only February and March of good selling left to the dealer in fuel oil. They also state that while they do not believe very many concerns will change from oil to coal there is a possibility if prices get much higher. Railroad purchasing is very heavy and the consumption is greater than at any time. Railroads can afford to pay more for the oil than the manufacturers for the railroad can save a good part of its freight costs. Fuel oil that sells for 3 cents a gallon Oklahoma costs 5.18 cents in Chicago and this freight is often equal the cost of the oil. The manufacturing outlook is excellent but it is yet early and some sober second thoughts will be taken by some of the oil buyers before they actually speed up their spring production.

Gas Oil More Active

Gas oil is more active. There is a steady demand for car lots and small quantities from manufacturing industries and the jobbers are distributing considerable amounts as furnace oil or to their local manufacturing concerns. The prices are a little better, the present range being 3½ to 3⅝ cents. With fuel oil selling at better than 3 cents a gallon it would be strange if gas oil did not show some advance.

Lubs Move Freely

Lubricating oils are moving more freely, both the auto oils and the grades of lubricating oils used by compounders. Dealers in animal and vegetable fats used by compounders report a large and active demand from all of the oil companies with their own compounding plants. One of the dealers in wool fats stated he had done a good business with all of the large local companies including Sinclair and The Texas Co., the only exception being he had not heard from the Standard Oil Co. This simply shows that the dealers in lubricating oils are preparing early for a large trade. The number of registered automobiles of all classes is approximately 17,500,000 and there will be a larger demand for auto oils and greases than a year ago and the stocks needed to supply this demand are moving rapidly. One large refiner says he is sold ahead on bright stocks and generally a large business is being booked on these grades. The industrial demand is also growing and there is a steady movement reported for export so the market is more active and firm as to prices.

Tank Wagon Rumors

There are no changes in tank wagon prices in the territory of the Standard Oil Co., (Indiana.) It has been subnormally quiet, the result of narrow margins between refinery prices and the tank wagon scale. There are quite a number of old contracts with some large jobbers that bear a wide margin and it might be possible if the demand was unusually light for gasoline there would be some offerings of gasoline for resale on these contracts but the new contracts are so much narrower in the spread and are so limited to the customer's requirements, this menace to stability of prices is removed to a great degree, if not entirely. The change made in Missouri is due to the new tax which went into effect on January 1.

There are numerous rumors of a tank wagon advance and one special "tip" is there will be an advance on January 7, and that will be of 2 cents but there is little faith in this tip except that it might be true.

KENTUCKY PRODUCTION DURING NOVEMBER, 1924

By T. S. Scott
Secretary Kentucky Oil Men's Ass.

The production of crude petroleum in Kentucky during November was as follows:

County—	Production
Allen	23,801.93
Barren	6,876.53
Bath	1,936.04
Boyd	186.37
Clinton	702.27
Cumberland	6,876.61
Floyd	312.17
Estill	32,290.66
Hancock	3,174.12
Hopkins	1,139.94
Johnson	91,366.74
Knott	211.37
Lawrence	48,881.53
Lee	164,474.54
Magoffin	80,713.79
McCreary	310.64
Monroe	1,593.27
Morgan	700.22
Ohio	7,942.27
Owsley	1,548.63
Powell	19,538.30
Simpson	957.29
Warren	44,136.00
Wayne	8,407.18
Wolfe	4,401.04
Elliott	427.60

TEXAS GASOLINE SALE NOVEMBER, 31 MILLIONS

AUSTIN, Tex., Jan. 5.—On the sale of 30,953,000 gallons of gasoline, seven refiners paid taxes of $309,530 into the State treasury under the 1-cent per gallon tax for November. Other refiners will pay probably $10,000 more.

The Gulf Refining Co. led with the sale of 10,177,462 gallons of gas during the month. Magnolia Petroleum Co. was second with 6,954,920 gallons; The Texas Co. third with 6,511,910 gallons. Others were: Pierce Petroleum Co., 3,098,065 gallons; Humble Oil, & Refining Co. 1,670,214 gallons; Cities Service Oil Co., 1,339,669, and Texhoma Oil & Refining Co., 1,200,814 gallons.

2:10

1—Coming to a pole in the trench line.

2:13

2—Boom lifted and the Barber-Greene Ditcher dodging the pole.

2:18

3—Completely around the pole, with boom almost back to full digging depth of 5 feet 4 inches.

2:30

4—Twenty feet of new trench opened. Notice that but twelve feet six inches of trench were lost. The operator had had but one day's experience before executing this maneuver.

A Movie of a Move

A graphic twenty minute story of the exceptional mobility of the Barber-Greene Ditchers is presented in the "still movie" shown above. In this instance, but approximately ten minutes of trenching time were lost in dodging around the pole, which happened to be in the trench line.

In addition to this quick maneuver, the ditcher was able to work so closely to the pole that only 12½ feet of the trench were left unopened.

This particular ditcher was used in Miami, Florida, for opening gas main trench.

Besides cutting costs and saving time through quick and efficient handling, Barber-Greene Ditchers have walked through some exceptionally hard digging.

Another Barber-Greene Ditcher in Orlando, Florida, trenched 14,687 lineal feet of ditch in 21 days, and two hours. These figures average to 699 feet per day.

This digging story is substantiated by results in practically every section of the United States.

If you desire greater digging speed and efficiency—if your costs are running rather high with present methods—if you must finish a contract in a short space of time—you might be interested in our booklet, *Modern Ditch Digging*

It shows how a number of companies have definitely "licked" such digging problems. A copy will be sent you upon request.

BARBER-GREENE COMPANY—*Representatives in 50 cities*—600 West Park Avenue, Aurora, Ill.

BARBER GREENE

Portable Belt Conveyors Self Feeding Bucket Loaders

Coal Loaders . . . . . Automatic Ditch Diggers . . . Coal Feeders

CALIFORNIA FIELDS

(Continued from Page 50)

feet but the best it would do was 25 bbls. a day of oil and water.

Huntington Beach

There were no completions recorded at Huntington Beach, although the Standard should have several holes ready for a test within three or four weeks. No. 18 Bolsa Chica, which looked so good for a time and gave evidence of extending the field northwest to the ocean front, passed out of the sand picked up at 4,365 feet a hard gray sand at 4,450 feet. The latter formation is still present at 4,560 feet and a core just taken showed no reaction to the ether test. All three wells on the General Petroleum's Dabney lease in the east side of the field fell off during the past week, No. 1 now doing 50 bbls. a day, No. 2 doing 55 bbls. and No. 3 making 112 bbls.

Miscellaneous Drilling

The Standard has carried No. 1 Patton at Rideout Heights down to 5,902 feet and, although the company is still drilling ahead, very little hope is held out for commercial production. It would not be surprising if work was suspended shortly. Judging by results to date, the Petroleum Midway went into this district rather heavily and, although a total of 18,588 feet of hole has been made on four properties, the company has yet to secure its first production. Work has been suspended on No. 1 Pellisier at 4,481 feet and on No. 1 Seward at 4,805 feet. No. 1 Hamburg, at 4,620 feet, is held up with mechanical trouble, while some cleaning out work is being done on No. 1 Witte at 4,682 feet.

The Pan-American is drilling ahead in No. 1 Jesurum at 4,645 feet, while the Mohawk is going ahead in No. 1 Denni at 3,824 feet. The Associated is fishing for some drill pipe in No. 1-A Gregg, drilled to 3,739 feet and it does not look as though the company will ever recover it. There is a possibility, of course, that it may be sidetracked.

There was very little change in the status of the Standard's two wells at Coyote, No. 40 Emery standing cemented at 457 feet and No. 100 Murphy at 4,163 feet. The company did not make any new hole in No. 21 Home at Whittier as the crew is engaged in cleaning out the hole.

In the Richfield district, the Chicksan finished rigging up No. 2 Bradford, while the Chanslor-Canfield Midway Oil Co. is preparing to pull the 4¾-inch out of No. 1 Bradford at 4,117 feet in order that it may be carried down to the deep sand. The Union is following a similar policy with No. 1 Coyle & Bogue, which will also be carried down for deep production. The Tonner Oil Co. spudded in No. 1 Swan with cable tools and is just getting under way at 165 feet. The General Petroleum is drilling ahead in No. 6 Thompson at 1,468 feet, this being the first development work which the company has done at Richfield for two years. The South Basin Oil Co. is contemplating deepening its well No. 1 at Newport from 1,065 feet to around 1,100 feet in the hope that the additional hole would increase production. The Pasadena Puente Oil Syndicate is still working its well No. 1 around 1,000 feet and has hopes of finishing a small pumper. The Interstate Oil Co. has plugged back No. 1 Mesa from 3,350 feet to around 600 feet but has not yet been able to secure any of this heavy oil.

Culver City

The Mohawk Oil Co. after several days of work, returned its well at Culver City to production doing around 150 bbls. No actual gauge is yet available and the estimate is based on a sump flow. The oil is of a rather low gravity, testing 18.1 degrees. This well created some little excitement following its completion because the company secured a natural flow, whereas the Standard was obliged to put its Los Angeles Investment well on the beam. There are no pipe line facilities available to the Mohawk and the company will be obliged to ship the oil out in tank wagons. The Superior Oil Co. leased the 60-acre Picot property, near the Mohawk's lease, paying, it is reported, a bonus of $500 an acre. The Associated has a 100-acre tract adjoining the Mohawk's lease and will probably start work on the first well within a short time. The Standard already has one driller on the Vicker's property No. 1 at 1,400 feet, just north of the Mohawk's new well, but will probably start others within a few weeks if conditions warrant. The Pan-American is making a water test on No. 1 Sentous at 1,728 feet and if a satisfactory shutoff has been affected drilling will be resumed immediately. In addition to No. 1 Vickers, the Standard is going ahead with well No. 3 on Los Angeles Investment Lease No. 1 at 1,967 feet and in No. 1 Stocker at 3,468 feet. No. 1 Potter-Smith at 5,420 feet and No. 1 on Los Angeles Investment Lease No. 2 at 4,655 feet are apparently outside the productive limits of the field and have only a small chance of securing production.

The Shell reports 4,325 feet of hole in No. 2 Bryant and 1,036 feet of hole in No. 3 Bryant at Seal Beach. The former should pick up the pay around 4,600 feet, if it is to duplicate the performance of No. 1 which is flowing 99 bbls. of oil and 1,500 bbls. of water from 4,620 feet. The company's No. 1 Bixby is drilling in a shale at 5,884 feet but has not yet picked up the oil sand. The Vosberg Petroleum is getting ready to test out its Arcadia wildcat at 4,879 feet and the test should be made within the next two weeks.

The Willshire Oil Co. is drilling ahead in its Bandini test at 4,600 feet, the formation being a sandy brown shale. The Marland Oil Co. has erected a rig for a wildcat to be drilled at Davidson City between Long Beach and Dominguez. The location, however, is not considered very favorable, because if there is a structure between the two fields it is very small in area, inasmuch as several outpost wells have been drilled beyond Long Beach and Dominguez.

Hawthorne Operations

Charles McFaddin landed a string of 6¼-inch in his well No. 1-A at Hawthorne and expected this 1,130-foot hole to repeat the performance of his well No. 1, which blew out at 1,100 feet. The new hole, however, yielded only mud and water after being swabbed for some time. The Winwell Oil Co. also operating in this general vicinity, is drilling ahead in a sandy shale at 4,700 feet. The Manhattan Pacific Oil Co. reported 3,165 feet of hole in its Hermosa wildcat but there have been no showings of importance.

No. 1 Culp of the Standard at Los Nietos showed 5,754 feet of hole yesterday but no oil showings have been found. Both the Associated and Union are making slow progress in their Newhall-Sangus tests, the former's wildcat showing 2,563 feet of hole and the latter's, 1,124 feet. The Superior has plugged back well No. 1-A, north of Whittier, from 4,165 feet to 3,460 feet and is at present testing the plug. No. 1 Andres is being delayed because of a fishing job at 1,212 feet.

The Standard is drilling ahead in one of its two San Emidio test wells, the other standing cemented. The company is at work on Section 28-11-22 and is drilling ahead in a blue shale at 2,820 feet. At water shut off was not secured on Section 5-10-22 and the hole has been accordingly recemented.

The General Petroleum is drilling ahead in its Commanche Point wildcat at 3,415 feet, the formation being a hard gray sand. The Standard's Lost Hills test, Section 5-27-20, is drilling in a blue shale at 4,250 feet. The Union is also drilling in a blue shale but its Riv Bravo wildcat is several hundred feet deeper. At 5,235 feet, the Union's test looks doubtful.

On the Kern River Bluffs, south of Bakersfield, the Pan-American is making good progress with No. 1 Parkford and reports 4,400 feet of hole. The General Oil Syndicate is drilling out the cement on Section 36-28-28, the bottom of the hole being 2,487 feet. The St. Helens has recemented its 3,000 foot hole on Section 14-29-28, a string of 10-inch being landed on bottom. There was very little development of interest in the Temblor section, due chiefly to mechanical trouble which held up work. The lease and tools of the Little Bear Oil Co. have been taken over by the Canal Oil Co. and this concern has resumed work on the former's 150-foot hole, which is full of junk. R. W. Edens has a 200-foot hole showing a little oil but the cement has not yet been drilled out. The Kendon Petroleum and the Russell Petroleum are installing portable rotary outfits and should resume work on their 300-foot tests within two weeks. A. J. Bomke, who staked a location a week or 10 days ago on Section 12-29-30, has not yet moved in material. The Shell started work in the Weed Patch section and made 984 feet of hole in six days. The company's test, known as No. 1 Jones, is located on section 33-30-29. The Main Oil Co. has resumed work at Wasco, following a three weeks' delay while rotary equipment was installed. The present depth is 3,987 feet, a core showing the formation to be a hard gray sand.

Coalinga District

E. J. Miley has 5,238 feet of hole in No. 1 Kreyenhagen on Jacalitos Dome near Coalinga but has not yet picked up the pay. The Snowolene, Section 22-21-15, is standing cemented at 2,811 feet. The Marland is hauling in material on Section 26-21-15 and indication point to an early spud. The General Petroleum's No. 1 Osechener, at Kettleman Hills, is drililng ahead at 5,800 feet, the formation being a hard brown shale streaked with sand. Hugh McPhail is making rather slow progress on Section 32-24-18, but this hole is only being worked on intermittently. The Marland is cleaning out on Section 13-24-18 and should be in a position shortly to start in again at 3,515 feet. The Associated, Section 12-23-18, and the Bolsa Chica, Section 30-23-19, are credited with technical spuds only.

E. J. Miley has not yet started work on No. 1 Hobson in Ventura County, attention being directed at present toward building a road and establishing a camp. No. 1 McFarland of the Oakridge Oil Co., Section 13-2-21, is still held up with a fishing job, which developed at 4,489 feet. The General Petroleum has started another hole on the Bradley property at Santa Maria and reports the depth as 207 feet. The company's first attempt to develop production on this lease was unsuccessful because of mechanical trouble. The Standard has apparently decided that the Buell Ranch, Section 27-7-32 in Santa Barbara County, is unproductive and is abandoning its fourth wildcat, No. 1-C, drilled to 4,536 feet.

E. J. Miley is redrilling No. 1 Smith in San Luis Obispo County, Section 22-31-12, at 1,225 feet, the bottom of the hole being 1,260 feet. The Oakridge is drilling ahead in a blue shale on Section 4-25-12 at 3,125 feet. The Paraffin Oil Co. reported a slight showing on Section 10-8-3 in San Mateo County at 725 feet, and the San Mateo Petroleum reports a similar encouragement in its 610 feet of hole on Section 15-7-5. The Holly Development Co. has suspended work on No. 1-B in Tulare County, Section 22-22-27, but is working on No. 1-A at 1,968 feet. The Pioneer Development, Section 17-22-17, found a slight gas showing at 965 feet but is going ahead.

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This accounts for the standardizing on

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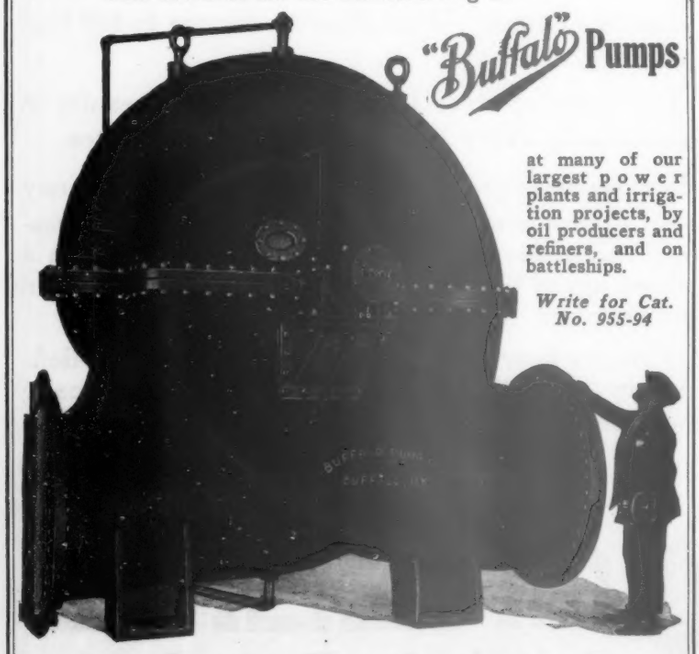

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OIL CITY QUOTATIONS BOLSTERED BY CRUDE

OIL CITY, Pa., Jan. 3.—The advance in the Pennsylvania grade crude oil market had the tendency to bolster up the market for refined products in the northwestern Pennsylvania refinery district during the past week. It came just at a time when the refinery prices seemed to be slipping off and it stopped any declines which might have been in sight.

Gasolines are about firm. The price has not changed but the demand is low largely as the result of the extremely cold weather. Kerosene is in fair shape and the demand is fair. The demand for fuel oil is good. Cylinder stocks, filtered goods and neutrals are holding their own. Wax is one of the real features of the market, the demand being better and its position stronger.

Jefferson

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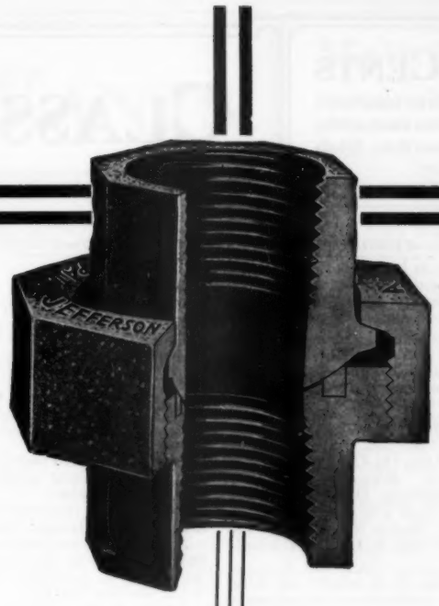
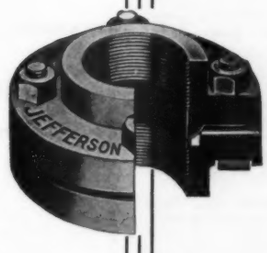


Style "A"

JEFFERSON Unions and Flanges are the highly perfected product of a company which has specialized in the making of these fittings for many years.

All JEFFERSON Unions and Flanges are made of high grade, air-refined malleable iron, carefully inspected and properly tested. Each fitting possesses a ground-ball, brass-to-iron joint which cannot corrode, no gasket being required.

The brass seat ring is located in a recess away from the runway of the fitting, which prevents the ring from being dislodged no matter how far the pipe may be screwed into the fitting.



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MORE THAN 70 STORES IN THE OIL COUNTRY

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LEASES—PRODUCTION

FOR SALE—At bargain prices, oil and gas leases, production and royalties in the Kentucky shallow fields. For full particulars and maps, address W. P. Harley, Bowling Green, Ky.

FOR SALE—Oil leases near drilling wells, Logan and Kingfisher Counties. Seven wells going down. H. M. Godfrey, Crescent, Okla.

NEW MEXICO Oil Leases—proven acreage near production. Also close to California and Ohio Oil Co. wells drilling in Eddy County. Benedum and Trees location on Manning Dome; Danciger Oil & Refining Co.'s well now drilling in Chaves County. States leases, 5-year renewable. McDonald & Jewett, Roswell, N. M.

FOR SALE in the Kentucky oil fields 45 bbls. settled production; lots of room on lease for additional development. Address W. P. Harley, Bowling Green, Kentucky.

FOR SALE—Four hundred acre lease, one-quarter mile from Wilcox test, in Elk County, Kansas. Also 200 acres, on good structure in Chautauqua County, Kansas. Box A-540, The Oil and Gas Journal, Tulsa, Okla.

100 ACRES—2 miles from 2 drilling wells; best structure in Jefferson County. For quick deal $25 per acre. J. G., Box 153, Ringling, Okla.

I HAVE six thousand acres under lease (five years, one dollar rentals) in southern Oklahoma on structure.

Spent all my money on one test well with rotary rig. I now want an experienced party who is capable and financially able to drill another test on this structure.

I have information from first well showing just where tests should be made before drilling deeper.

I have complete rotary rig and can secure string of cable tools.

If interested, state what you are in position to do. Don't care to hear from promoters.

Address Box A-543, The Oil and Gas Journal, Tulsa, Okla.

ATTRACTIVE BLOCK, solid, University lands, Crockett and Reagan Counties, for sale or drilling. P. R. MacIntosh, 215 Neil P. Anderson Bldg., Fort Worth, Tex.

LEASES—Southeast Kansas being redrilled; chance for shallow, and Wilcox sands. Cheap drilling; Wilcox, 1,200 to 1,600 feet; don't miss this play while acreage is reasonable; $2 to $5 per acre. Write, Lapham & Co., Chanute, Kans.

NORTH TEXAS

Shallow field leases, including offsets, at low prices. Offsets to producing leases in Archer County have sold as high as $900 cash per acre. Chance for excellent profits. Write for maps and prices. P. R. MacIntosh, 215 Neil P. Anderson Bldg., Fort Worth, Tex.

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Owner will sell one-half perpetual royalty on lands located in active territory, between two drilling wells. Twenty acres or more price $2.50 per acre. Terms if desired. Address "Owner," P. O. Box 1036, Fort Worth, Texas.

DOME DEVELOPMENT by use of shallow test rigs at small expense draws claws from wildcatting, reducing the costs of prospecting to sound business basis. Method endorsed by highest authorities. Now operating. Desire business men to investigate with view of investing. James W. Rich, Oil Operator, 401-2 Bankers Mortgage Bldg., Houston, Texas.

METCALFE COUNTY, KENTUCKY, OIL LEASE

50 acres adjoining pumping wells, drilling depth 325 feet; 46 gravity oil. Terms attractive to parties who will drill. A. W. Richards, Edmonton, Ky.

LEASES—PRODUCTION

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18,000 acres, University permits, dated October 1, 1924, joining University permits of Sun Oil Co. and Gulf Production Co. Transcontinental now drilling and three more wells to start. Price reasonable.

20,000 acres 10-year leases, Crockett County; large and small blocks adjoining best companies.

5,000 acres, 10-year leases; close to drilling wells; Reagan County.

3,200 acres University permits, Reagan County; close to Big Lake Oil Co., and Texon Oil & Land Co. producing wells. Want drilling contract.

3,000 acres 10-year lease. Upton County; near drilling well and joining leading company holdings. Prices and maps on request.

C. W. WEBSTER
17th Floor W. T. Waggoner Bldg.
Fort Worth, Texas
Reference: R. G. Dun & Co.

LEASES—PRODUCTION

FOR SALE—3,200 acres in Owensboro (Kentucky) Field; approved form lease; straight ⅛ royalty, 25 cent rental; three producing sands. Write or wire T. C. Morgan, Room 1305, 27 William Street, New York City, N. Y.

J. F. MARION COMPANY
Magnolia Building
Dallas, Texas
Buys and Sells
Texas Royalties
"Ask Us First"

TO LEASE—640 acres, oil, gas, coal land, $1 per acre. J. W. Rollinson, 711 W. Grand, Oklahoma City, Okla.

AT BIG CREEK Oil Field, southeast side of dome, I have financed one drilling; want to interest parties to finance another drilling on my 10 acres adjoining. Will personally superintend operations. James W. Rich, Oil Operator, 401-2 Bankers Mortgage Bldg., Houston, Texas.

The Annual Review

will be published on January 29. It will contain a complete and accurate survey of the activities during 1924—a vast wealth of expert information presented in such form that detailed facts, figures and conditions will be easily available to the reader.

Through the Classified Wants Section you can keep your business message in the minds of 20,000 oil men, as it will be continually used for reference during 1925.

Mail your advertisement NOW and you will be ABSOLUTELY SURE of keeping the merits of your product or want before the best men in the Industry—the readers of The Oil and Gas Journal.

The OIL and GAS JOURNAL
Tulsa, Oklahoma

LEASE—We want to get in communication with parties wanting valuable acreage in the new Durango Basin Oil Pool and who are financially able to drill one or more wells upon part of the same domal structure the Gypsy Oil Co. is now drilling on tract B, Ute lease. Recent geological report locates a structure and recommends drilling on this ground; estimates Dakota sands at 3,300 feet or less; ample acreage in Colorado covering the best part of this Basin is open for a deal to the right parties. Write fully your ability to qualify, with references. Write P. O. Box 272, Durango, Colo.

I OWN producing properties in Illinois, Oklahoma and Louisiana Gulf Coast Fields which I will turn over to capable and responsible parties to operate and develop on royalty basis. I also own some excellent wildcat and semiproven leases near production on which will give very favorable drilling contract, and if required, furnish drilling rig and casing.

A. R. MANLEY
Jennings, Louisiana

FOR PANHANDLE oil leases and drilling contracts write Dr. W. R. German, Canadian, Texas.

BIG CREEK oil field 25-acre lease for sale. Only close-in lease on market. Near drillings. Address M. H. Rogers, 1204 West Drew Ave., Houston, Texas.

WILL GIVE 75 per cent of 34,000 acres oil leases to parties assuming my contract; must spud in by March 1 to 10. Any machine capable of 2,500 feet; five-year l... subject to renewal; rental 1 cent per ... Standard of California drilling 600 feet lower down struck 3,000,000 feet shallow gas with 1,000-foot erosion; judging from log Eureka drilling well should strike four sands within 1,400 feet; oil 58 gravity; 6,000 acres is either in or around Gellespie ranch that Geologist Lupton of Denver has made a location property in. Colfax County, New Mexico, Townships 24-25-26—Ranges 24-25-26—See U. S. Government's Survey Bulletin 726. Maps, report, responsible parties only. Box 824, Wichita, Kansas.

OIL PROMOTER, needing cash, will sell one-sixth interest in wildcat near Glasgow, Mont.; 10,000 acres on structure blocked solid. Splendid report and map by Mutual. About to be drilled. Under contract you will receive share in royalties averaging 4 per cent on 5,000 acres of top acreage. For quick deal will take $2,000. Should appeal to a real oil man. H. H. Waldron, Froid, Mont.

TEN THOUSAND Acres for sale or drilling contract, blocked in northern Hempstead County, Arkansas. Five-year commercial lease. Address C. T. Atkins, Box 420, Camden, Ark.

FOR SALE—EQUIPMENT

FOR SALE—One galvanized ... building 68x28 feet, strong wooden fram... large ventilators, plenty of windows, ... as main building in gasoline plant. Wo... make good barn. Can be torn down a... moved in sections. Six miles west ... Chelsea and six miles north of Fo... Warner-Caldwell Oil Co., Nowata, Okla.

35 H. P. SUPERIOR Gas Engine, ... Reid 24 ft. Band Power, both new, ... been set up. Wyoming. Bargain. J. ... James. Equitable Bldg., Denver, Colo.

WHITE SPACE at the top and bottom of an advertisement makes it conspicuous. Ask for it in your next advertisement. Figure the cost at regular rates per line.

THE ANNUAL REVIEW

The 1924 Annual Review of the Petroleum Industry will be published January 29. It will contain statistics, analyses, charts, maps, and information covering every activity of the producing, refining, marketing, and exporting branches of the industry.

The issue will be used for reference throughout 1925. If your advertisement is in this section, it will be working for you all through 1925.

Mail your classified advertisement now, instructing us to insert it in all January issues, including the Annual Review. It will help you.

BESSEMER Gas Engines, 15- to 16... h.p.; other makes 300-h.p. Oil and ... and steam engines, compressors, gen... ators; complete gasoline plants. H. ... Russell, St. Marys, W. Va.

FOR SALE—At Yale, Tanks, Boiler... Stills, Loading Rack and Land at ... prices. Write P. O. Box 747, Yale, Okla.

FOR SALE—Three sets 5-inch Ideal Rig Irons at bargain. The Western Iron & Foundry Co., Wichita, Kansas.

FOR SALE—National drilling rig and tools in good condition, located at Severy, Kans. Apply to Attorney Carl Ackerman, Sedan, Kans.

FOR SALE — Drilling machine and tools complete. "No. 2 National" in perfect condition. Ready to drill well. Location Mingo Junction, Ohio, near railroad. Standard Pipe & Supply Co., Box 500, Phone 870, Marietta, Ohio.

GAS ENGINES
For Sale

Two Bessemer gas engines, 10- and 15-h.p.; can be seen operating steadily; good condition; Wico starter attachment; reason for selling, changing to motors; bargain for quick sale.

KERR HUBBARD & KELLY
Sand Springs, Okla.

FOR SALE

20 MILES of 6-inch line pipe and ... miles of 3-inch line pipe, with good threads and couplings. This pipe has been used for oil and is in A-1 condition. For more particulars, write to the Ohio Iron & Supply Co., Lima, Ohio.

COMPLETE OUTLAY of valves, fittings and pipe 7 to 10 inches in diameter, 2½ to 16 feet long, for 125 and 250 lbs. pressure, used a year in steam plant, at one-third list price, including 13 bolted globe valves, angle L, 16 flanges, 4 to 10 inches, 10-inch blank flange, 3 flanged gate valves, 250 lbs. pressure, 5 and 7 inches; 4 Ls, 4½ to 10 inches; 2 Ts, 4½ to 9 inches, 1 T 10 to 7 inches, 5 bushing, 4½ to 10 inches; 1 250-lb. pressure 7-inch return bend 5 feet, 6 inches; 1 Cookson feed water heater 400-h.p., used about 6 months; 3 Snow boiler feed pumps; also 1 S. K. C. 150-kw. generator; 28,900 lbs. 70-lb. new high T rails; 3 single truck dump cars; and 50 and 120 tons relaying 56-60 lbs. rails. Sell any part. Address

J. C. HOUSER
Temple, Texas

25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

MAIL your advertisement now. It will be published next week. Cash with order.

FOR SALE—EQUIPMENT

FOR SALE—30 miles 3-inch pipe line, 20 miles 2-inch pipe line. Acme Foundry & Machine Company, Coffeyville, Kans.

FOR SALE—Complete standard string tools from 15½ in. down to 6¾ in. Address J. G. Hunt, 1217 Johnstone Ave., Bartlesville, Okla.

FOR SALE — Three Bessemer gas engines, 25 h. p., first-class condition. Straight clutch. Priced to sell. Ready to load. Standard Pipe & Supply Co., Box 509, Phone 870, Marietta, Ohio.

TANK TABLES

TANK TABLE COMPUTATIONS
Have your tank table computed by Tank Gauging Engineer. Tables guaranteed. $2.50 to $5 per tank. White cloth prints, 75 cents to $1.25 each; blue prints, 25 cents to 75 cents each. Mail strappings and instructions to G. E. Smith, 1612 W. Huisache, San Antonio, Tex.

PAINTS

3,000 GALLONS Blue Sublimed Lead paint made on the following specification: 52 per cent Blue Sublimed Lead. 48 per cent Pure Boiled Linseed Oil. Good for priming or repainting on wood or metal—sample on request. Will sell any or all at bargain. Write W. H. Hoover, 4917 Main St., Kansas City, Mo.

FOR SALE—REFINERIES

2,000-BARREL Refinery at Jennings, Okla., to be wrecked and sold all or any part. C. T. Benner, Box 301, Jennings, Okla., Phone 31 and 142.

HELP WANTED

EXECUTIVES, ENGINEERS, $3,000-$25,000, find our individual, confidential service effective in making new connections. Personally conducted by Mr. Jacob Penn, the eminent employment authority, known to leading business men throughout America. Not employment agency. Jacob Penn, Incorporated, 305 Broadway, New York City, New Yorrk.

JUST THINK. $2.80 will pay for sending a four-line advertisement all around the world four times. A four-line Classified Advertisement usually consists of 24 words and you know a great deal can be told in a few words. Mail your advertisement to the Classified Section now so that you will get in next Thursday's issue.

SALESMAN to call on producers, drilling contractors, refiners and natural gasoline manufacturers. We offer a high class profitable line. Territory North Texas, southern Oklahoma, Louisiana, Arkansas, etc. Would consider placing as side line. Strictly commission. Reply giving reference and experience. Box A-534, The Oil and Gas Journal, Tulsa, Okla.

WANTED—First class, experienced oil and gas auditor, thoroughly familiar with general office accounting, including income tax, depletion, depreciation and cost of accounting for large refining, producing and pipe line company. Position available at this time. Please address answer to Box A-561, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED

DRILLER—Sixteen years' experience with cable tools and rotarys, production—yes—desires position or job where ability counts, references given. Address C. H. Garner, 115 Polk St., Amarillo, Tex.

ACCOUNTANT and Office Manager wants connection with progressive oil company; years of experience in oil accounting and thoroughly familiar with drilling and production. Young man; aggressive, reliable and qualified to handle any work that presents itself in an oil office. Box A-564, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED

SINGLE MAN—Age 39, wants position with oil scout or lease man for some reliable oil company. I know practically every Creek and Seminole Indian in the two tribes and I have been dealing with them for the last nine years. Address J. D. Adams, P. O. Box 560, Tulsa, Okla.

PRODUCTION MAN and Driller wants employment with reliable company. Has had charge of large development. Box A-550, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED—Refinery Process Superintendent; 8 years experience; understand Dubbs and Burton cracking processes, will go anywhere. Box A-560, The Oil and Gas Journal, Tulsa, Okla.

WANTED

WANTED to buy 55,000 bbls. of low gravity crude oil. State gravity, location and price of oil. Address Box A-551, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Dogs to board. Best of care and feed. F. S. Thompson, Route 1, Tulsa, Okla., just east of McFarland golf links, and one-eighth mile south of Federal Drive.

WRITE your advertisement, mail it to The Oil and Gas Journal, and it will be placed in the hands of thousands of producers and refiners in all parts of the world. It doesn't cost much.

WANTED—Producing royalties. Oklahoma and Kansas. Give full details. P. O. Box 502, Independence, Kans.

WANTED—One or more associates to help me finance drilling several shallow and deep test wells in semi-wildcat fields. Have leases and permits on 288,000 acres. Some patented land balance Government lands. Situated Texas, Utah, California, Oklahoma and Kansas. Some big companies willing to drill on overriding royalty willing to let them have play; prefer to have closed corporation and test out several choice locations and if we hit to then sell well and some acreage. Big operator write me. Box A-539, The Oil and Gas Journal, Tulsa. Okla.

WANTED
6 Men with $1,000 Each
Have 4,000 acres Edwards County, Illinois, where seventeen years ago well drilled 9 feet sand making lot of oil and abandoned. Still making oil today through all that debris and salt water. My plan is to drill into this sand in center of block, get the oil and sell out. Absolutely believe will get enough production to command $50 per acre for the block. Figure it out yourself.
Have contractor, rig, pipe and fuel ready to go. Your $1,000 buys one-twelfth of the whole. Money left in bank until well is drilled in. First six wires authorizing $1,000 each close the deal Every statement verified.
P. E. TICHENOR
414 Mercantile Bank Bldg.
Evansville, Ind.

WHITE SPACE at the top and bottom of an advertisement makes it conspicuous. Ask for it in your next advertisement. Figure the cost at regular rates per line.

BROKERS to handle Eastern New Mexico leases. Excellent geology. Also Archer, Vernon, Olney and public utility offerings. W. A. Smith, Waggoner Bldg., Wichita Falls, Texas.

WANTED — Information regarding zinc, lead, antimony, bauxite, gold and silver deposits, and oil structures in Oklahoma and Texas. Box A-463, The Oil and Gas Journal, Tulsa, Okla.

BUSINESS OPPORTUNITY

ACREAGE FOR SALE
Industrial site and oil prospect near Houston, Texas. Fronting on ship channel. J. A. Stephens, owner, Box 789, Shreveport, La.

DRILLING CONTRACTOR desires associate who will raise money to drill for oil. Will make attractive proposition. Address Box A-563, The Oil and Gas Journal, Tulsa, Okla.

RESPONSIBLE DRILLERS — Acreage proposition for drilling contracts. Oil information. Farms and ranches. F. J. Shindler, Deer Trail, Colo.

THE SMALL SUM that it costs to insert an advertisement in the Classified Section of The Oil and Gas Journal enables you to place your desires in the minds of men who are always interested in a good proposition.

STOCK SELLING

Stock-selling campaigns planned and executed by an expert; every detail handled quickly, economically and effectively; established reputation.
WILLIAM R. THURSTON
33 West 42nd Street
New York City, N. Y.

CORE DRILL your structure with diamond drills and reduce the hazard of wildcatting. Let us help your geologist correlate structure before you put cable tools at work. The cost is relatively small and the possible saving enormous. On well located tracts we will accept acreage in lieu of profits. Drilling Corporation of America, George H. St. Clair, General Manager, 205 Cosden Bldg., Tulsa, Okla. Phone 3-9031.

BUSINESS SERVICE

F. C. CHILDS
Consulting Petroleum Refinery Specialist
Plans, specifications, costs for refineries, inspections, and appraisals made for purchases, processes investigated. Advice on investments, manufacturing difficulties, excessive costs and losses overcome. Refining value of any crude ascertained, 25 years practical experience in all branches of the refining industry.
P. O. Box 264. Telephone 275
Coffeyville, Kans.

J. M. CONNOR, Electrical Engineer
Installations—Plans—Inspections
Motors—Pumps—Engines
506 North Texas Bldg., Dallas, Texas

CAREFULLY COMPILED summary of oil prospecting and development in the San Juan Basin to date, mailed for $1. Township maps showing permit and leaseholders for $1. Gip Smith, Aztec, New Mexico.

MACHINE WORK

Electrical Machinery, Rewinding and Repairs
TULSA ARMATURE WORKS
526 N. Main St. Tulsa, Okla.

INCORPORATIONS

DELAWARE incorporator. Charters, fees small, forms. Charles G. Guyer, 901 Orange St., Wilmington, Del.

FOR SALE—DOGS

REGISTERED Bull Pups—Bulldog Park, 501 Rockwood, Dallas, Texas.

AUDITING

AUDITING Income Tax returns, balance sheets and auditing a specialty. Your work solicited. Reference Muskogee books.
H. E. NEWTON
619 East Okmulgee
Phone 2793-J Muskogee, Okla.

ORCHARDS AND FARM LANDS

FOR SALE OR EXCHANGE
My farm, comprising the NW quarter of 21-11-16, 4 miles from Onapa, on the main line of Katy Railroad; 140 acres in cultivation; two never-failing lakes; two-story house; good barn; fruit for family use. Will exchange for up to date, first class merchandise, or exchange for modern residence property in Muskogee. This land is perfectly level; no better black prairie farm land in State; convenient to schools and church. Price $9,000.
Also E half of the SE quarter of Section 2 and the SE quarter of the NW quarter and the SW quarter of the SE quarter of Section 22-16-10, Creek County, Oklahoma. The eighty in Section 21 is all in cultivation, good level, rich black prairie land. On the south forty of this eighty is an oil well which has been producing since 1920. One-sixteenth of the royalty is now paying the owner $75 per month. The south forty in Section 22 has two offset wells. Oil men tell me that there is a good shot on both of these tracts for oil and gas. Both forties subject to lease. Will sell or exchange for first class merchandise or would take in Buick or Studebaker car as part pay. Price named upon request. Address owner, Box 23, Checotah, Okla.

FARM INVESTMENTS
We have four high grade, well improved and well located farms for sale at investment prices. Write H. W. Crowe, Box 112, Columbia, Mo.

EIGHTY ACRES, well improved, irrigated Colfax County, New Mexico; clear, water rights paid; trade for something closer here. Owner, Rees, 4020 E. 27th, Kansas City, Mo.

LETTERHEADS—PRINTING

SAY IT WITH PRINTING, Basic Bond Letterheads $3.50, envelopes, $2.50. Get our quantity prices. Creative Advertising Department. Safety Printing Co., Box 276, Rock Island, Ill.

OIL FIELD LEGAL BLANKS—Leases, assignments, releases, township plats, gauge books, run tickets, time books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

IN READING The Oil and Gas Journal you will be taking the best means possible to keep yourself acquainted with the progressive developments and changes that are continually going on within the industry.

CONSUMERS' LEDGERS
We are prepared to furnish from stock standard forms of Gas Meter Consumers Ledgers. Sample forms and quotations on request. First class material and workmanship.
DERRICK PUBLISHING CO.
Oil City, Pa.

MULTIGRAPHING

"REAL MULTIGRAPHING"
Every job is the job with us. Direct Mail Advertising Specialists—Multigraphing, Mimeographing, Mailing Lists. Complete Mail Campaigns from you to your prospect's desk.
THE PUBLIC LETTER SHOP
Pan-American Bldg. Tulsa, Okla.

MAIL LISTS

MAILING LISTS
Oil and Other Stockholders
in over 1,000 companies; 1260 Texon Oil & Land Co., $10. 3455 Ralph Dudley Oil Co., $25 and 600 other oil companies. Write for detailed price list.
A. F. Williams, Mgr.
166 W. Adams St.
Est. 1880 Chicago, Ill.

MAILING ADDRESS

HAVE A New York address, mailing privileges; reasonable. Address "International," 623 Knickerbocker Bldg., New York City, New York.

Fishing Is Easier with Baash-Ross "two-in-one" Packing Overshot

You have a regular type overshot together with the advantages of a packer, in the Baash-Ross Packing Overshot. It catches "lost pipe" in a "twist-off" like an ordinary overshot, yet permits an oil and water circulation that assures a doubly quick fishing job.

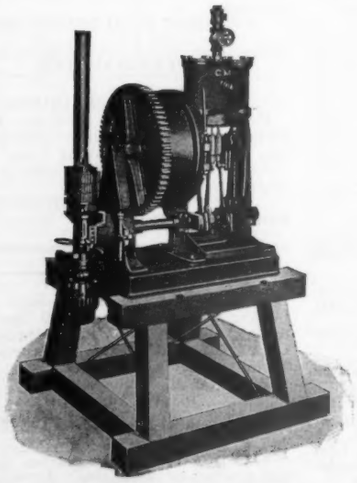
Write for complete information

Baash-Ross Tool Company
5512 Boyle Ave., Los Angeles, California
Phone Delaware 2141
P. O. Box 694, Houston, Texas
Branches: Brea, Long Beach, Torrance, Rosecrans, Calif.

Cut Oil Drilling Costs

Efficient and Reliable

Thirty Years of Successful Manufacturing and Contracting
Prices Attractive



Write for Booklet No. 6

STANDARD DIAMOND DRILL CO.

Manufacturers of the Supreme Drilling Outfits

First National Bank Bldg., Chicago, Ill.

Works
McHenry, Ill.

No Immediate Fear For Future Resources Is British Opinion

By Alfred W. Nash and H. C. Shatwell
Before Institute of Petroleum Technologists

Particularly since the inception of the petroleum industry the availability of future supplies of mineral oil has been the subject of skepticism analogous to the opinions expressed from time to time regarding the future of the coal industry of Great Britain. The technical journals of America, which is the most highly developed country so far as petroleum is concerned, ten years ago were seriously warning the country that the then rate of production of oil could not be maintained, and that a policy of conservation was imperative if the petroleum industry was to be saved from ruin. Excellent as this latter advice appeared then to be, the annual production of crude oil in the United States is now more than double that of 1913. During 1923 no fewer than seven new oil fields were discovered, and this in a country which is not only well populated, but which is being constantly explored and prospected with the drilling bit.

The fact that America is now importing large quantities of oil from Mexico does not prove the rapid exhaustion of its own deposits, but simply that the demand has exceeded the present available supply; the question as to the future source of oil, therefore, so far as America is concerned, is one which need not give rise to immediate disquietude.

Before it can be stated definitely that the world's supply of petroleum will soon become exhausted, the following points, among others, need to be definitely established:

(a) That all the free petroleum which the earth contains has been located.

(b) That the problem as to the origin of petroleum in general, and each class of oil in particular, has been solved.

(c) That oil fields can be discovered and not simply located as a result of surface workings by local inhabitants.

Bearing in mind the history of the American petroleum industry and the fact that outside of this country the search for mineral oil has not been carried on diligently, it would appear as though the first point had not been established. Further, a considerable portion of the earth's surface has not yet been explored and large areas are still practically unknown; also, the work of exploration in dense jungle is so difficult that the possibilities of oil being discovered in such places cannot be ruled out.

In regard to the second point, the problem of the origin of petroleum is no nearer solution than it was in 1888, when the development of Henkel's (1725) and Hagnet's (1794) theories began to receive serious attention. It is impossible, therefore, to state definitely that oil is not in a process of natural formation at the present time.

When oil prospecting companies realize that a prospect cannot be investigated thoroughly by a geologist, by his simply noting the surface indications of the formation below, often within the space of a few days, and are prepared to send with him a drilling staff who would, in the first place, drill for geological information and not for oil, then further discoveries would soon be made.

Before discussing future reesources it would be as well perhaps to review our present position. Many new oil fields have come into prominence within recent years, and these are now being explored. As exploitation continues, so will geological knowledge of these particular areas increase, and there is no doubt that these fields will extend far beyond their present boundaries, as the older fields of America, Burma, Rumania, Galicia, etc., have done in the past.

The recently-developed oil field in Persia places that country fourth on the list of oil producing areas, and there is no doubt this position can and will be improved in the future. That country is one of the very few which has had close geological investigation bestowed upon it, with the result that it has been proved to contain oil-bearing strata extending from the southern coast of Persia, a little to the west of Bunder Abbas, right into Mesopotamia as far as Lake Van to the southeast of Erzerum, a distance of 1,200 miles, and many structures favorable for the accumulation of oil have been discovered. The production hitherto has been from one area, the Maidan-i-Naphtun Field, but other areas have been already proved. That even the comparatively small area comprising this field is a long way from being exhausted is proved by the fact that only some 60 wells have been drilled so far, which cannot be called "over-drilling." All of these wells came in as "gushers," and continue to flow under their own pressure with check control; one well has produced over 5,000,000 tons of crude oil, and was still producing when the last report was made public. Needless to say, the colossal waste which has taken place on the American oil fields and elsewhere due to "offset" drilling is a result of the granting of small leases will not be repeated in this field, and the most pessimistic must agree that it is a little too early to talk of the serious depletion of the oil resources of Persia.

ROCKY MOUNTAIN AREA

(Continued from Page 54)

ton, is at 2,235 feet and has had several shows of oil and gas in the shale. The American Indian Oil Co. is starting a wildcat near Basin in the Torchlight Field that is to be drilled to the Kimbal sand; this sand is a part of the Mowry formation and is about 40 feet above the Oche Luie sand. The Western States lost a rig by fire in the Hamilton Dome Field the past week and is replacing the burned structure.

The Atlas Oil Co. is starting a wildcat on the Split Hill structure in Converse County. This structure lies about 35 miles northeast of Douglas and towards the Lance Creek Field in Niobrara County and the first well is to be drilled on Section 31-37-67. No tests have ever been put down near this area and the geological examination shows a structure considered to be linked with the Lance Creek structure about 15 miles to the east.

The Mutual Oil Co. purchased 55 acres of land in Section 5-33-75, east of the town of Glenrock where the Mutual has its refinery. This land is to be used as a tank farm and the Mutual paid $10,000 for the tract.

Salt Creek Completions

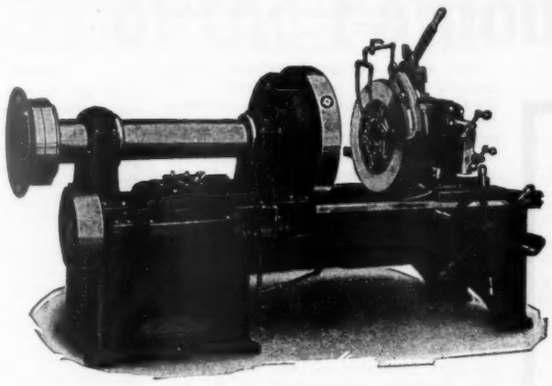
The Midwest Refining Co. completed three wells in the Salt Creek Field the past week; the Wyoming Oil Fields Co. found a producer good for 100 bbls. at 1,473 feet on Section 26-40-70 and the Wyoming Associated Oil Co. completed a producer good for 555 bbls. on Section 35-40-79 at 1,450 feet. The Utah Oil & Refining Co. completed a second Wall Creek well on Section 30-40-78 at 2,135 feet estimated at 100 bbls.

The Platte River Association drilling a wildcat near Guernsey on Section 12-26-67 in southeastern Wyoming found some gas at 1,625 feet though nothing of commercial value.

The Hatfield Oil Co., drilling on the Eight Mile Lake Dome in Carbon County, is about 2,000 feet and drilling after a shutdown of a few days. This is the second well on this structure, the first being a gasser supplying gas to the Parco refinery.

Runs from the Fields

Salt Creek	45,470
Teapot	1,330
Big Muddy	2,490
Grass Creek	2,420
Elk Basin	640
Greybull	20
Rock River	2,800
Lance Creek	880
Poison Spider	230
Osage	250
Hamilton Dome	490
Lander	110
Byron	60
Pilot Butte	20
Lost Soldier	4,130
Ferris	210
Cat Creek	2,000
Sunburst	2,235
Craig	1,000
Fort Collins	700
Florence	215
Miscellaneous	450
Total	69,170



SOMETHING NEW

No. 4 Peerless Machine with Landis die-head

We offer a complete line of pipe threading machines of the single pulley drive, all speed changes being obtained through steel gears in a compact gearbox. These machines can be supplied with the Landis Stationary die-heads, or with the Peerless adjustable die-heads, or both heads can be arranged to fit the same cross rail on the die stand.

Send in your inquiries

BIGNALL & KEELER MACHINE WORKS,
of the N. O. Nelson Mfg. Co.
Edwardsville, Illinois

BIT AND JAR-STEEL

BOX-PIN-STEEL-SLIP-STEEL

UNDER-REAMER-BODY and CUTTER STEEL, DRILL COLLAR STEEL

ASCO

CAPPING and SOCKET STEEL TOOL-JOINT STEEL

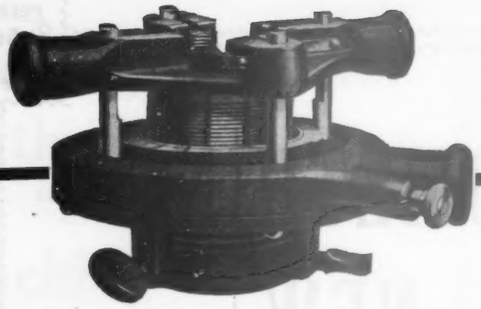
SPECIAL-HIGH-GRADE

SPECIAL ALLOY STEEL **FORGING-BILLETS** QUALITY and SERVICE

Manufactured By

ANDREWS STEEL CO.

NEWPORT, KY.



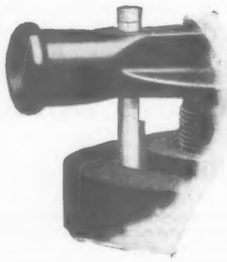
THE "TOLEDO" NO. 1 A—

For All Kinds of Fittings

No matter whether your fittings happen to run under or over-size, with the new "TOLEDO" No. 1 A tool you can produce threads that are sure to make up absolutely tight.

Only with genuine "TOLEDO" trade-marked tools can you secure this adjustable feature. The long micrometer line taper pins now used in "TOLEDO" No. 1 and No. 1 A tools, enables the operator to instantly adjust the tools for cutting any depth thread desired.

This "TOLEDO" No. 1 A tool is standard in the oil fields, and its superior efficiency is vouched for by experienced operators.. There are no better tools made than genuine "TOLEDOS" bearing this trademark. When buying look for it, insist on it, and accept no substitute.



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GERMANY'S EFFORTS TO FIND OIL POOLS

(Continued from Page 24)

wells have been drilled, the deepest being down to 877 meters; however, no success has been reached until this day.

Just on the German frontier of Upper Austria there has been exploited the oil district of Taufkirchen producing a heavy asphalt oil with a specific gravity of 0.986. Consequently it is not impossible to encounter oil also on the German side in the same geological strata. At the Western frontier the oil showings in the Swiss molasse are an equivalent indication. Should new oil fields be opened in this part, these fields in the border regions would probably be of the type of the faulted beds while approaching to the center they would become more similar to the type of the anticlinal or dome deposits. However, the prospects for oil and gas in commercial quantities are not very favorable so that we feel not very confident with regard to the improvement of oil production in Bavaria.

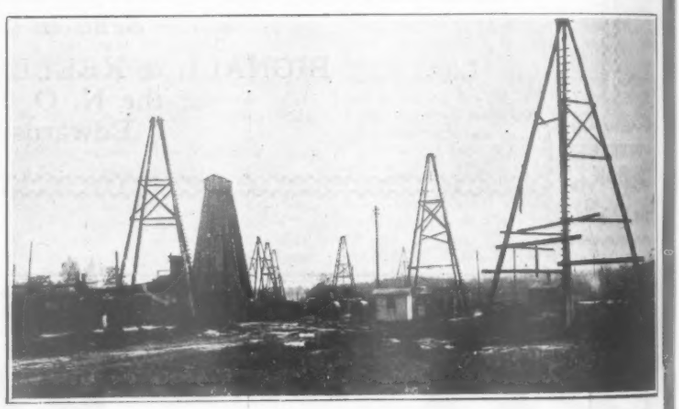
Region No. 2

There is not much to be said about this possible little oil region marked No. 2. The most southern part of Upper Silesia which has been ceded to Poland and Czechoslovakia is still covered by the folded old tertiary of the foreland of the Carpathian Mountains, covered by softly folded Miocene. In the wells which have been brought down to the carboniferous strata lying underneath some few oil traces but very often also stronger gases have been encountered. Up to date no drilling operations have been undertaken, but Czechoslovakia is said to be interested. At present it is not possible to say if this district will have any economical importance for oil or gas production in Germany.

Geologically the oil province marked No. 3 includes the "Rheintalgraben," the depression between the mountains on the eastern and western border of the valley of the Upper Rhine. There the Tertiary strata have sunk in steps from the borders to the valley and consequently an oil deposit would represent the prototype of the faulted beds with dipped strata. The well known oil field of Lower Alsatia centered at Pechelbronn is such a one. Although this oil field is situated now beyond the German frontier it was developed when it belonged to Germany. Drilling was started not much before 1880. Before that time oil was exploited here by mining. The accompanying table shows the production of the country up to 1918 when it was parted from Germany. The total of about 700,000 tons is the height of the German production in Alsatia, the number of wells amounting to 2,000. There had been a proven oil bearing territory of about 350 square kilometers, but of course, only a small part of this area was exploited. Since Alsatia was transferred to France there has been obtained some considerable success, proving a further extension of the oil bearing region. The large rise of production was due to the exploitation by mining begun by the Germans. As according to the experience at Pechelbronn oil exploitation by mining gives nearly threefold the percentage of oil obtained by drilling, this method will become of vital importance for the future of many other oil fields and finally for the future of the world's production of oil.

Seeking Oil in Baden

It has been proved also that part of the "Rheintalgraben" which remained German is oil bearing so that it may become important for German oil production. As a natural consequence of the loss of Alsatia the Germans are trying to find compensation in Baden. There have been drilled seven wells during the past 3 years in this province. Five of these wells are situated on a narrow field near Ubstadt, south of Heidelberg. So far only in these wells oil has been encountered, not yet in commercial quantities. Oil traces having been found in several places drilling operations will no doubt be continued. As in all the other German oil fields so also in Baden patient and constant work will be necessary before the fields will be perfectly explored. Further oil traces are known on the left hand border of the Rhine in the Pfalz where drilling had also been started, but here, too, no production was obtained. It is not impossible that the oil deposits of Lower Alsatia are passing the frontier of the country to the north. This question has not been cleared yet by 11 wells drilled in the Pfalz.



View of one of the older producing lots in Nienhagen.

The "Munster Basin" (No. 4 on the map), belongs to those territories which are still untouched by the oil industry, offering, however, a theoretical interest. In nearly every formation from the carbon to the Tertiary there are known more than 100 single traces of oil, gas and asphalt, especially from wells drilled for the exploration of the productive carbon. It might be possible that at some places on the border zone oil deposits of the kind of the faulted beds, which are still unknown, have been formed. But this territory as well as the small district of Upper Silesia will not be taken into consideration for the future of the German oil production.

Northern Germany

The area marked No. 5, mentioned in the map as the oil province of northern Germany, covers about 160,000 square kilometers. Indeed, oil traces are known in the farthest east and in the west as well as at a good many single places, some in great distance from each other. In places where the geological structure is sufficiently known they are arranged after certain laws. The geological conformity of the whole large territory consists in the fact that, probably more or less in its full extension, it is tectonically controlled by the system of the Saxonic folding. In the strata of the underground—as far as it is of oil-geological importance—participate, with local variations in the facies, all formations from the Permian to the Tertiary. Although there are differences in the single parts resulting from the geological development there remains the general conformity contrary to the other parts of Germany in the

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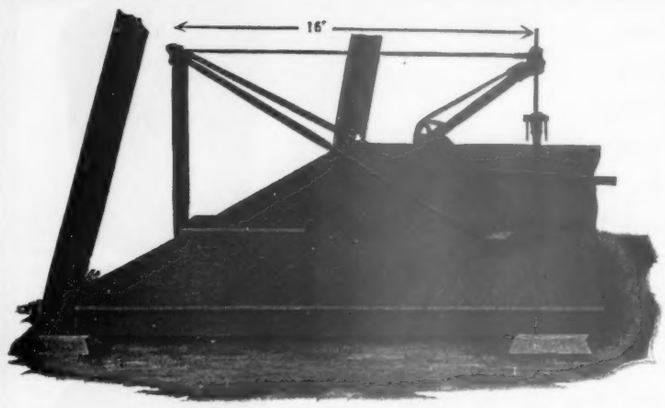

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R E S U L T S

provinces described so far. So the boundaries have been established according to such considerations. The straight-lined northeastern frontier is the border of the Baltic Table. However, the exact boundary to the southeast is more or less uncertain. The conformity of the oil deposits in this territory—as experience has taught, of the known deposits and consequently probably also of those which are not known yet but already exist—is that they are bound to the flanks of a salt dome of the Zechstein-formation, the oil existing in the sandstone, the sands and the sandy marl from the upper trias to the Tertiary, and even in the cap rock.

We may presume with the greatest certainty that in the whole oil territory of northern Germany there will never be a commercial oil deposit which genetically is not connected with a salt dome, even if it should be situated a great distance on its flanks, thus losing the strict character of an oil deposit of the salt dome type. With this there is the greatest variety in details, the kind of position and the thickness of the strata as well as the disturbances caused by the complication of those geological events which have formed this type of oil deposits.

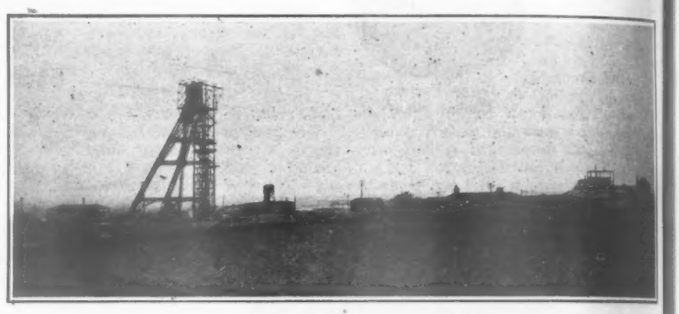
Sure Traces of Oil

From the point of view of the exploration carried through up to now the great oil territory of northern Germany must be divided in two halves which are very unequal in their extension and the frontier of which is nearly the Elbe. The greater eastern part has not yet shown any production of oil and with some few exceptions no tests have been made there. But as there are some sure traces of oil and the geological conditions being in the whole region the same or at least very similar, it will be one of the future tasks of the German oil industry to search for oil in the East Elbian part of northern Germany. The places suited for this purpose must be chosen with great precaution and after exact geological study. Preliminary geological work has already been done and without any doubt the time will come where also these large areas will be explored by drilling. Certainly some parts not being suited for drilling tests will have to be eliminated however, there will remain a wide territory for pioneer work. Anyhow, it must be realized that just here work is more difficult than in the western part, but it might also be more successful.

The center of the German oil industry lies up to the present in the west, in the province of Hanover. Not all of the salt domes we know here and which have been opened partly by mining, partly by drilling, for exploitation of deposits of potassic salt have proved to be accompanied by oil deposits, for the conditions necessary for the formation of oil deposits of the salt dome type are not always given. At some of them deeper drilling in the strata of the flanks will perhaps lead to the discovery of new oil beds. At some places there have been found only oil traces or oil in no commercial quantities, but increased exploration might prove still other oil deposits of economic importance. Of course, there are also some parts of such a special geological structure that probably they will not be oil bearing with commercial quantities.

Pools in Hanover

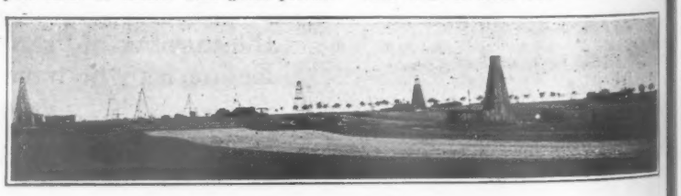
There are at present only four pools in southern Hanover giving a production worth mentioning, the pools at Wietze, Steinforde, Hanigsen-Obershagen-Nienhagen, Oelheim and Oberg, each of which belongs to a special salt dome. The two last named pools had always only a very small influence on the total production of Hanover. Olheim is an old exhausted field. Since 1862 there has been drilled an area of about 16 hectares. The former yearly production of 1,500 tons sank below 500 tons. The oil is of middle



Oil mine at Helde, in the foreground the shaft, with plants at right.

gravity. Some drilling in a greater distance from the salt dome and from the old oil field has not shown up to the present any new productive beds. The yearly production of Oberg is estimated now at about 1,500 tons, after having drilled during the last years about 30 wells on the same number of hectares. It is a light oil with rich contents of benzine, a higher horizon of heavy oil not giving any commercial production.

Wietze is the oldest of the productive fields. Drilling was started in 1859. We have spoken already about the development of the production of this field which has today 1,500 wells. Until 1908, when it reached the height of production with 110,536 tons, almost the entire production of Hanover came from Wietze because at that time from the other fields of this province there did not result a production of 1,000 tons. The area of about 500 hectares where drilling has been done is since 1910 continually decreasing so that some years ago production sank to 30,000 tons. This proves the exhaustion of the old field and the impossibility to revive the productive area by new wells. As it is known, Wietze was the second field in Germany where mining for oil by shafts and galleries was undertaken. With the assistance of the mining it was possible to avoid a further decrease and it will be possible to recover part of the loss of production. Wietze is an excellent example of the commercial importance of oil mining for an old field which seems to be exhausted and which under other circumstances would be at its end. But for oil drilling Wietze must be considered as lost. The greater part of its production is the heavy oil.



Old field of Oberg, wells drilling and mining

Nienhagen Field

Hanigsen-Obershagen-Nienhagen. Being situated on one side of one salt dome these three fields belong together with re-

(Continued on Page 124)

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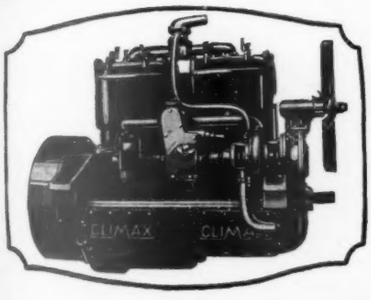

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Oil Securities Display Strong Tone

Attention Well Distributed Among Various Issues While Some Low Priced Independent Issues Made Sensational Advances

By N. O. Fanning
Room 543, No. 30 Church St., New York

NEW YORK, Jan. 3.—Oil securities displayed a strong tone during the last week of December, many going to new high prices for the year. Attention was well distributed among the various issues, although some of the low-priced independent stocks made sensational advances.

Simms Petroleum was one of the features of the oils listed on the New York Stock Exchange, advancing to 24 during the week. Buying of the stock was attributed partly to the bringing in by the company of good wells in the new Wortham oil field. Earnings of the company during the first nine months of the year amounted to $2.69 per share on 673,280 shares of stock outstanding after deduction for drilling expenses and reserves for depletion and depreciation. Its treasury position at the close of the period was strong, with $4,470,000 of quick assets including $2,225,000 in cash and Government securities.

Independent Oil & Gas was another feature, selling up to $16 per share on active trading. This compares with a low of 5¾ during 1924 which was established as late as September 26.

Standard Oil of New Jersey was one of the features of the Standard Oil group, selling up to 40½. Shell Union Oil, Royal Dutch and Shell Transport & Trading were all strong, Shell Union Oil selling up to a new high for all time of 22½.

Atlantic Refining showed renewed strength, selling up to 96⅞ for the first time since falling below that figure on its precipitate decline from 140 to around 78. It is interesting to note that at its close on December 31, 95½, it was down exactly 37 points from its closing price on December 31, 1923.

On the New York Curb Exchange subsidiaries of the Standard Oil Co. of New Jersey played a leading part in the advance, Humble Oil & Refining advancing at 42½ and Imperial Oil, Ltd., to 119. International Petroleum, Ltd., a subsidiary of Imperial Oil, Ltd., was strong at 23½. All of these three stocks were unusually active.

Average Advances

The Oil and Gas Journal's weekly average price of 20 representative oil stocks listed on the New York Stock Exchange advanced to 51.73 on December 29, up almost a point over the preceding week. In the corresponding week of 1923 the average stood at 53.77 and two years ago it closed at 59.20.

In view of the unfavorable year the oil business has passed through due to the overproduction and constant additions to stocks the action of oil stocks is considered good. This is attributed to recognition of the fact that with consumption of oil steadily gaining from year to year, the recent depression could only be temporary. It is also a tribute to the intrinsic soundness of the business.

Technical Position Sound

It has been pointed out during the last few weeks in this column that the technical position of oil securities has for some time favored an advance in prices. Stocks of railroad, equipment and other industrial companies have been advancing at a fast pace for several months. In contrast, oil stocks as a group have remained comparatively quiet and weak during the entire period, following drastic declines early in the year.

The following table shows the gains or losses established by representative stocks during 1924, showing the contrast offered by oils:

Stock—	Closing prices 1923	1924	Net Gain	Net Loss
Standard of Cal..	64¼	62⅜	.....	1⅞
Standard of N. J.	40⅞	40½	.....	⅜
Atlantic Ref.	132½	95½	.....	37
Cosden & Co.	35⅝	26⅝	.....	8⅞
Houston Oil	70⅝	80	9⅜	.....
Invincible Oil	16⅛	15⅛	.....	1
The Texas Co.	44⅛	43⅛	.....	1
Pan Am. Pet.	61⅛	64	2⅞	.....
Marland Oil	38⅛	38½	⅜	.....
Pacific Oil	51	54⅛	3⅛	.....
N. Y. Central	104⅝	119½	14⅞	.....
Am. Smelt. & Ref.	59	97⅝	38⅝	.....
American Can	104¼	160	55⅝	.....
General Electric	196⅛	320	123½	.....
F. W. Woolworth	old.282	342	60	.....
Southern Pacific	86⅞	102¼	15⅜	.....
Kennecott Copper	34⅝	55⅝	21	.....
U. S. Steel	94¼	119⅜	25⅛	.....

The theory generally advanced for strength in oils at this time, aside from optimism as to the outlook, is that many who purchased railroad and other stocks and have had a large profit on them, are selling (taking profits) and switching to oils, which have not had a proportionate rise. A test of this theory will come during the next few weeks, when there is more likelihood of a desire to take profits as taxes on such profits will not then be payable until 1926.

Mexican Eagle Oil

Results of operations by Mexican Eagle Oil Co. for year ending December 31, will be seriously affected by the prolonged strike at Tampico refinery during which period also effects of the revolution in 1923 prevented normal operations at Minatitlan refinery, according to statement to stockholders. During the last few months refinery operations have been disturbed by the silting up of the Panuco River due to heavy floods, with consequent delays and interruptions to shipping, according to the Wall Street Journal.

The company's crude production from its own wells will show a considerable falling off compared with 1923, and while a large quantity of crude has been purchased and refined and other measures profitably employed to meet the demands of the Anglo-Mexican Petroleum Co., Ltd., and of the Mexican domestic and Central American markets, total sales in 1924, as a result of the refinery strike, will be less than in 1923. Production from stripping wells has kept up satisfactorily and drilling of such wells will be continued. Production obtained in Cacalilao heavy oil area has not been great, owing to the spotted nature of the field and holdings of the company not being sufficiently large to afford protection against offset drilling. Holdings in Corcovado, north of Cacalilao, are being tested, in view of good production found nearby.

Production of crude oil and crude oil purchased by Mexican Eagle for past three years follow (in barrels):

	Production	Purchases
1924 (estimated)	5,300,000	13,600,000
1923	9,251,591	11,180,000
1922	12,390,429	5,418,000

Total shipments, together with products sold in the Mexican domestic and Central American markets for the past three years, were:

	Barrels
1924 (estimated)	18,000,000
1923	21,600,000
1922	22,619,110

Profit derived from Mexican domestic and Central American sales in 1924 will show a considerable reduction compared with 1923, due maily to increased competition, but also partly to general Mexican conditions. Due to better prices, value of export sales should not show a serious reduction in 1924, despite decrease in quantity. Cost of crude purchased was somewhat higher than in 1923. Considerable further economies in working costs have been effected but the compulsory reduction of refinery operations has tended to increase cost of refined products. On the other hand, as the greater part of the company's export trade is realized in sterling, and its main liquid cash assets are represented by sterling, fall in the sterling value of the Mexican peso from 27.6d on December 31, 1923, to about 25.5d currently, has resulted in considerable exchange credits to the company.

No large capital outlays were undertaken during 1924, apart from exploration work, and none is anticipated in the near future.

Imperial Oil's New Plan

A special meeting of the stockholders of the Imperial Oil Co., Ltd., of Canada, the Canadian subsidiary of the Standard Oil Co. of New Jersey, has been called for January 14 to vote on a plan to split up the company's capital stock by the issuance of four shares of new no par value stock in exchange for each share of $25 par value now held.

The Imperial Oil Co., Ltd., controls the International Petroleum Co., Ltd., which is actively developing oil fields in Colombia, S. A., where it has 2,000,000 acres of potential oil bearing lands. The International Co. is shipping oil daily to the Standard Oil Co. of New Jersey.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stocks—	Par	§Dividend Rate	Clos. Quotations Jan. 5	Dec. 29	1924 High	1924 Low	1923 High	1923 Low
1.	American Republics	..	..	*45	48	48	25	..	..
2.	Associated Oil	25	6	33½	32½	34⅝	27⅝	29¼	23½
3.	Atlantic Ref. com.	100	..	99⅝	95	140½	78½	160	98⅝
4.	Barnsdall "A"	25	..	22⅝	22¼	22¼	14	35	9⅞
5.	California Pet. com.	25	7	26	23	29	19⅞	28½	17½
6.	Cosden & Co. com.	..	..	27⅛	26½	40¼	22⅝	62¼	23⅝
7.	General Am. Tank	..	†3	52⅝	50⅝	53	35½	71⅝	40
8.	General Asphalt	100	..	58¼	60¼	63⅜	31⅝	64	23
9.	General Petroleum	25	8	42¼	42⅝	45	38⅝	..	..
10.	Houston Oil	100	..	78	79	82½	61	78	46⅝
11.	Independent Oil & Gas	10	..	13⅞	12⅞	16¼	5⅝	11¼	3⅜
12.	Indian Refining	10	..	6⅜	5¼	7	3⅜	8½	4
13.	Invincible Oil	50	..	16	15⅝	16⅞	11⅝	19¼	7½
14.	Maracaibo	..	..	28	28⅝	37½	25⅝	28¼	16
15.	Marland	..	..	38⅝	38½	42	29	59⅝	18½
16.	Mexican Seaboard	..	..	21½	20⅜	25⅝	14⅛	19⅝	5⅜
17.	National Supply	50	6	61⅝	60⅛	72½	54	68	54
18.	Pacific Oil	50	†2	53⅜	53½	58¼	45	52⅛	31½
19.	Pan American com.	20	16	64⅝	64⅝	65	44⅛	93½	53
20.	Phillips Petroleum	..	†2	36⅞	36⅞	42¼	28½	69⅝	19⅝
21.	Producers & Refiners	50	..	28½	28⅞	43½	22⅝	58¼	17½
22.	Pure Oil com.	25	6	29½	29½	30¼	20	32	16¼
23.	Royal Dutch, N. Y. sh.	13.40	2.62	53½	51⅜	59½	40⅜	55½	40½
24.	Shell Transport	10	92½	43⅛	42	42	33	41¼	29½
25.	Shell Union com.	..	†1	22⅞	22	22½	15⅝	19¼	12⅝
26.	Simms Petroleum	10	..	23	22½	24	10⅝	16⅝	6⅛
27.	Sinclair Cons. com.	..	..	17⅛	17	27⅛	16	39⅝	16
28.	Skelly Oil	25	..	24¼	21⅝	29	17½	35	12½
29.	Standard of California	25	8	62⅝	62⅝	68½	55⅛	64½	47½
30.	Standard of N. J. com.	25	4	41	39⅝	42¼	33	44¼	30⅝
31.	Standard of N. J. pfd.	100	7	117⅝	117⅛	118⅝	115⅜	118¼	114⅝
32.	Superior Oil	6	..	5	5	8⅛	2⅝	6⅝	2
33.	The Texas Co.	25	12	43	43	45⅝	37⅝	52⅞	34⅝
34.	Texas Pac. Coal & Oil.	10	..	11½	11	15¼	8¼	24⅝	5½
35.	Tide Water Oil	100	4	133½	130	151	116¼	144	94
36.	Transcontinental	..	..	4	3⅞	6¼	3⅜	14½	1¼
37.	Union Oil of Cal.	25	7.2	38	37	39	35½	..	..
38.	Union Tank com.	100	5	122	123	132⅞	94	114	106
39.	White Eagle Oil & Ref.	..	2¼	28½	27⅝	29⅝	23½	30⅜	20½
	Standard Oil Stocks								
40.	Anglo-American Oil	£1	25	18⅝	18⅝	18⅝	14⅜	19⅝	13⅛
41.	Borne Scrymser	100	12	235	*233	264	150	153	110
42.	Buckeye Pipe Line	50	14	62	61¼	85½	61	94	57½
43.	Chesebrough Mfg. Co.	25	14	*48½	49⅝	52½	29¼	340	205
44.	Crescent Pipe Line	25	..	*12⅝	12⅜	20	11¼	25	15
45.	Cumberland P. L.	100	10	*136	134	148	109	117	80
46.	Eureka Pipe Line	100	8	*84	85	105	74	117¼	87
47.	Galena Signal com.	100	4	58	55⅝	69⅝	52½	78	55
48.	Humble Oil & Ref.	25	4.8	42¼	42	43⅝	36	41	28¼
49.	Illinois Pipe Line	100	12	133	125	161	123	171	115
50.	Imperial Oil Ltd.	25	12	121½	117	119	99	123	92
51.	Indiana Pipe Line	50	8	75	76	100	66	103	81
52.	International Pet. Co.	100	x50	23⅛	23⅛	24⅝	16⅞	24⅝	13⅛
53.	Magnolia Pet. Co.	100	4.5	139	137	162	124	166	123
54.	National Transit	12.50	16	23¼	22½	25⅞	20⅝	29	19½
55.	New York Transit	100	10	67½	66	97	64½	138	70
56.	Northern Pipe Line	100	6	82	81½	107½	72	111	96
57.	Ohio Oil Co.	25	8	66	62½	79¼	53	85⅝	48⅝
58.	Penn-Mex. Fuel	25	..	37	32½	45⅝	27	45	10½
59.	Prairie Oil & Gas	100	8	214	208	269	193	272	152
60.	Prairie Pipe Line	100	8	106	106½	111	100	117	93
61.	Solar Refining Co.	100	15	205	*200	230	170	212	161
62.	South Penn Oil	100	..	140	129	176	117	196	100
63.	South West Pa. Line	100	4	77	*72	89	68	89	66
64.	Southern Pipe Line	100	8	*90½	90½	100	80½	116	87
65.	Standard of Indiana	25	10	62⅝	62½	69⅝	54¼	69⅞	48⅛
66.	Standard of Kansas	25	..	38	35½	50⅞	32½	56¼	36½
67.	Standard of Kentucky	25	16	118¼	119⅝	121½	101	109⅛	76
68.	Standard of Nebraska	100	20	244	247	262	198	280	186
69.	Standard of New York	25	5.6	44½	44½	48	37⅝	49⅝	35½
70.	Standard of Ohio com.	100	10	340	355	377½	277	320	270
71.	Swan & Finch com.	25	..	23	23½	28	20	..	..
72.	Vacuum Oil	25	†3.75	80½	81½	83¼	56½	55½	40
73.	Washington Oil	10	..	*29½	*29½	29	25	28	20¼
	Miscellaneous Stocks								
74.	Cities Service bks. sh.	..	†21	17⅝	18	19	13¼	18⅛	12⅝
75.	Gulf Oil Corp. of Pa.	25	6	66⅝	66	67⅝	56	68¼	45⅝
76.	Mutual Oil	5	10	12½	12	14	9⅝	..	..

*Bid, no sales. †In dollars. §The figures in this column are kept up to date as far as possible, but are not guaranteed. xCents per share.

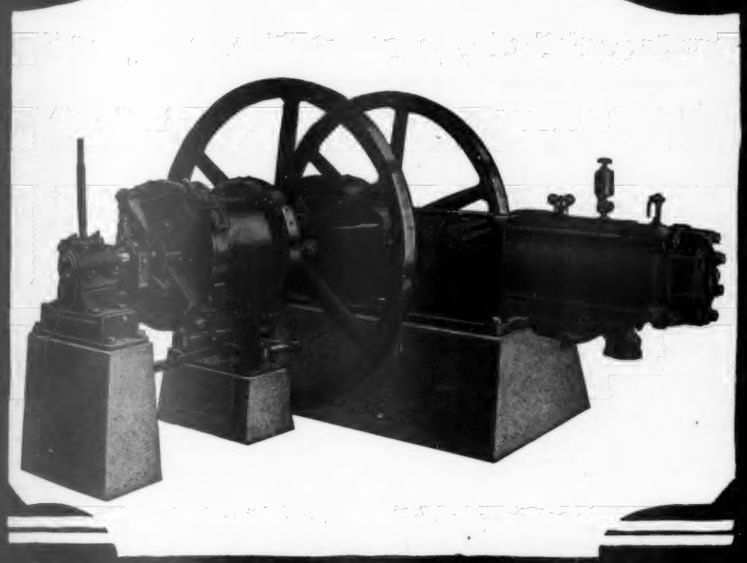
The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Jan. 5	53.01	Dec. 1	49.59	Oct. 27	47.58
Dec. 29	51.73	Nov. 24	50.23	Oct. 20	46.99
Dec. 22	50.76	Nov. 17	50.07	Oct. 11	45.24
Dec. 15	50.36	Nov. 10	51.86	Oct. 6	46.20
Dec. 8	49.49	Nov. 3	48.16	Sept. 27	46.70

OPENS CHICAGO OFFICES

CHICAGO, Jan. 3.—The Randolph Petroleum Co. of Tulsa has opened Chicago offices in the McCormick Building at 332 S. Michigan Avenue, with R. M. McNeilly in charge. He was formerly with the Diamond Petroleum Co.

FRANKLIN VALVELESS Gas Engines



DESIGNED to meet the exacting requirements of the Oil Producer. Built in all sizes from 15 to 60 H.P. inclusive, equipped with reversible or one way clutch and is of three port, two cycle VALVELESS construction.

Broken springs, adjusting and grinding of valves are entirely eliminated.

The most practical and satisfactory gas engine for every field.

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OIL REFINERS—DO YOU KNOW—

What small leaks cost in your boiler plant?
This table will give you some idea how fast they run into large amounts each month.

Size of opening diameter	Number of pounds wasted per 30-day month	Cost of wasted steam at 30c per 1000 pounds
½"	1,519,200	$455.70
⅜"	854,850	256.44
¼"	379,800	114.94
⅛"	94,920	28.48
1/16"	23,737	7.12
1/32"	6,934	1.78

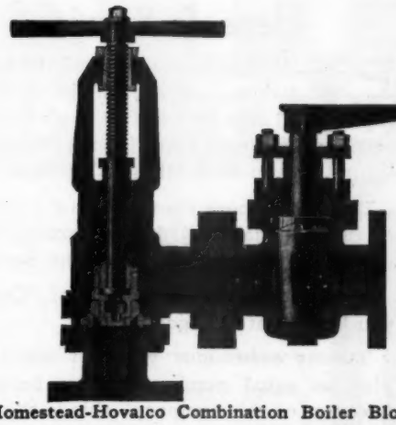
If you have leaking blow-off valves, a few months leakless service would soon pay for a Homestead-Hovalco-Boiler Blow-off.

Homestead Quarter-turn Valves are used singly on smaller boilers in the field and smaller power plants.

NOTE THESE FEATURES:

1. Straight thru unobstructed Passage.
2. A quick opening Homestead Quarter-Turn Valve next to the boiler, an easily repaired or reground "Hovalco" beyond the Homestead.
3. Results: This combination will enable you to regrind or repair the valve furthest from boiler without interrupting plant operation.

A high quality product, at a reasonable price now giving satisfactory service to thousands of users. Get the facts in our 1924 Catalog.



Used by Standard Oil, Cosden & Co., General Motors Co., and many other large and nationally known firms.

Homestead-Hovalco Combination Boiler Blow-Off Valves

SPECIFY HOMESTEAD-HOVALCO BLOW-OFF VALVES ON YOUR NEXT INSTALLATION

HOMESTEAD VALVE MANUFACTURING CO., Homestead, Pa.

HOMESTEAD

ESTIMATES OF CRUDE OIL RESERVES CONTRASTED

(Continued from Page 21)

old fields have been definitely outlined and new ones discovered, and finally improvement in methods and special training in calculation and of the depletion of oil properties have been developed to meet the requirements of the tax laws.

Nevertheless, since 1921, when the last estimate was made there have been notable oil discoveries which would probably now cause another upward revision of U. S. Reserves.

With no intention to disparage the various estimates, but simply to reveal the difficulty of estimating the quantity of oil underground, further tables presented with this article show each estimate in the light of subsequent oil producing results.

Estimate of 1908

Taking the 1908 estimate (Table II) we find that the great Mid-Continent Field has long since been "exhausted," its reserves at the end of that year having been estimated at a minimum of 257,000,000 bbls. and a maximum of 857,000,000 bbls. Production of the Mid-Continent territory, 1902 to 1923, inclusive, has aggregated 2,390,000,000 bbls.

The Gulf Coast Field, given from 96,000,000 to 846,000,000 bbls. in 1908, has produced since then 305,000,000 bbls. Other fields are left with varying terms of life; the Appalachian from 22 to 129 years at the rate of 1923 production and California only from 12 to 25 years.

Calculation of 1914

The 1914 estimate (Table III) is given in two ways, by districts and by States. This estimate also slights the Mid-Continent which is found to have produced 187,000,000 bbls. more than it was credited for. Deducting interim production from the reserve estimate by States, it is found that Kansas, Kentucky-Tennessee, Louisiana and Texas have been "exhausted" while millions of barrels of oil have been taken from Arkansas and Montana not listed in the estimate. At the rate of 1923 production, California's indicated reserves will last only five years, Oklahoma three years, and Wyoming three years.

Figures in 1915 and 1918

The 1915 estimate (Table IV) leaves Oklahoma-Kansas with only three years' reserve, North Texas with only half a year and North Louisiana is shown as "exhausted." California will pass out in five years.

As recent an estimate as the 1918 estimate (Table V) by comparison with subsequent production shows Oklahoma-Kansas with only five more years of life, and North Texas and North Louisiana "exhausted," and California with but six years to go, and Wyoming seven years.

The conclusion to be drawn from the comparisons of reserve estimates is, however, that erasures must be expected in any set of figures attempting to set forth petroleum resources. Virtually every compilation revealed as much or greater quantities of petroleum in underground storage as shown in former estimates despite the heavy interim drain.

TABLE NO. 5
United States Geological Survey—White Estimate of United States Oil Resources (1918)

	Petroleum remaining end of 1918 Barrels	Production 1919-1923 inclusive Barrels	Petroleum remaining end of 1923 Barrels	Production through 1923 in excess of estimate Barrels	Production 1923 Barrels	Number of years reserve based on 1923 Production
Appalachian	550,000,000	149,722,000	400,278,00	.....	28,225,000	14
Lima-Indiana	40,000,000	13,587,000	26,413,000	.....	2,404,000	11
Illinois	175,000,000	§53,874,000	119,126,000	.....	9,500,000	13
Mid-Continent—						
Oklahoma-Kansas	1,725,000,000	780,849,000	944,151,000	.....	189,179,000	5
North Texas	400,000,000	392,779,000	7,221,000	.....	100,202,000	0
North Louisiana	100,000,000	†187,874,000	.....	87,874,000	59,079,000	..
Total Mid-Continent	2,225,000,000	1,361,502,000	.....	.....	348,460,000	
Gulf Coast	750,000,000	151,917,000	598,083,000	.....	33,271,000	18
Wyoming	400,000,000	63,050,800	336,949,200	.....	44,785,000	7
California	2,250,000,000	723,285,000	1,526,715,000	.....	262,876,000	6
Alaska, Colo., Mich., Mont, etc.	350,000,000	7,608,200	342,391,800	.....	2,886,000	119
Total	6,740,000,000	2,524,546,000	4,301,328,000	87,874,000	732,407,000	

†Includes Arkansas. ‡Includes Montana and Colorado. §Includes southwest Indiana. •"The Unmined Supply of Petroleum in the United States," by Dr. David White, Chief Geologist, United States Geological Survey, before Society of Automotive Engineers, February, 1919.

TABLE 6
•U.S.G.S.-A.A.P.G. Estimate of U. S. Oil Resources (1921)

Producing Territories—	Pet. Remaining End of 1921 Bbls.	Production 1921 Bbls.	No. Yrs. Reserves Based on '21 Prod.	Production 1922-23 Bbls.	Pet. Remaining End of 1923 Bbls.	Production 1923 Bbls.	No. Yrs. Reserves Based on '23 Prod.
Eastern:							
New York	100,000,000	980,000	102	2,250,000	97,750,000	1,250,000	78
Pennsylvania	260,000,000	7,434,000	35	15,034,000	244,966,000	7,609,000	32
West Virginia	200,000,000	8,003,000	25	13,379,000	186,621,000	6,358,000	29
Ohio	190,000,000	7,333,000	26	13,866,000	176,134,000	7,085,000	25
Indiana and Michigan	70,000,000	1,163,000	60	2,130,000	67,870,000	1,043,000	65
Illinois	440,000,000	10,044,000	44	18,090,000	421,910,000	8,707,000	48
Kentucky, Tennessee, Northern Alabama and Southeastern Mississippi	175,000,000	8,963,000	20	17,060,000	157,940,000	8,077,000	19
Total Eastern	1,435,000,000	43,920,000	33	81,809,000	1,353,191,000	40,129,000	33
Mid-Continent:							
Kansas	425,000,000	36,232,000	11	60,016,000	364,984,000	28,250,000	12
Oklahoma	1,340,000,000	113,978,000	12	310,500,000	1,029,500,000	160,929,000	6
North Louisiana and Arkansas	525,000,000	34,983,000	15	105,420,000	419,580,000	59,079,000	7
North Texas	670,000,000	70,892,000	9	183,516,000	486,484,000	100,202,000	5
Total Mid-Continent	2,960,000,000	256,085,000	11	659,452,000	2,300,548,000	348,460,000	7
Gulf Coast	2,100,000,000	34,160,000	61	70,388,000	2,029,612,000	33,271,000	61
Rocky Mountain:							
Colorado, New Mexico and Arizona	50,000,000	108,200	465	214,000	49,786,000	104,000	479
Wyoming	525,000,000	19,221,800	27	71,500,000	453,500,000	44,785,000	10
Montana, Nebraska and South Dakota	100,000,000	1,435,000	70	5,231,000	94,769,000	2,782,000	34
Total Rocky Mountain	675,000,000	20,765,000	32	76,945,000	598,055,000	47,671,000	13
California	1,850,000,000	114,709,000	16	421,362,000	1,428,638,000	262,876,000	6
Total	9,020,000,000	469,639,000	19	1,309,956,000	7,710,044,000	732,407,000	11
Non-Producing Territories:							
Missouri, Iowa, North Dakota, Wisconsin and Minnesota	40,000,000						
Utah, Nevada, Oregon, Washington, Idaho	80,000,000						
Eastern Gulf Coast and Atlantic Coast States	10,000,000						
Total	130,000,000						
Grand total	9,150,000,000						

•Report issued by Geological Survey, February, 1922. Joint committee of U. S. Geological Survey and American Association of Petroleum Geologists.

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WELL BIT & JAR STEEL
Here *Is* Service

PRODUCED in the heart of the nation's steel making industry, the home of more expert steel makers than all the rest of the country combined, there is exceptional service in Colonial Well Bit and Jar Steel.

Backed by more than 20 years' experience of the Colonial Mill devoted exclusively to the production of high grade Tool Steels.

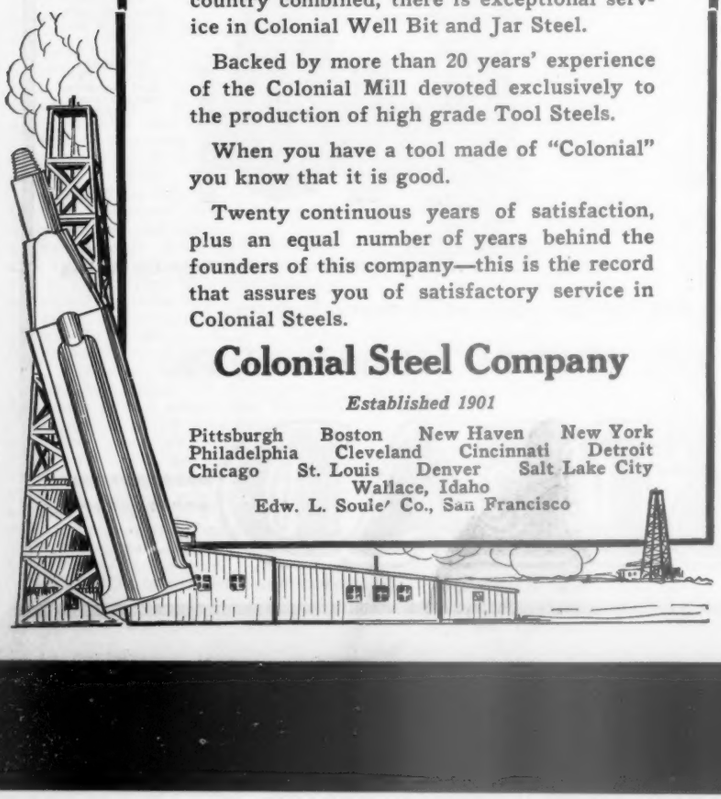
When you have a tool made of "Colonial" you know that it is good.

Twenty continuous years of satisfaction, plus an equal number of years behind the founders of this company—this is the record that assures you of satisfactory service in Colonial Steels.

Colonial Steel Company

Established 1901

Pittsburgh Boston New Haven New York
Philadelphia Cleveland Cincinnati Detroit
Chicago St. Louis Denver Salt Lake City
Wallace, Idaho
Edw. L. Soule Co., San Francisco



FUEL OIL STORAGE FOR BURMA MARKET

All of the fuel oil handled in Burma is at present imported from Abadan on the Persian Gulf, although considerable quantities have been imported in the past from Borneo. The imports during the year ended March 31, 1922, amounted to 17,209,863 gallons, and during the year ended March 31, 1923, to 9,901,266 gallons. The annual sales of fuel oil used for Diesel engines in various parts of Burma and for smelting purposes at the Burma mines at Namtu amount to 1,500,000 gallons. The annual consumption of fuel oil used for bunkering of ships is estimated to amount to 3,000,000 gallons at the present time.

The Burma Oil Co. has two tanks at Syriam, 4 miles south of the City of Rangoon, with a capacity of 1,000,000 gallons each. One tank is used for the storage of fuel oil intended for consumption in the Syriam refinery and for sales to Burmese consumers such as the large lead and silver mines. The other tank belonging to this company is known as the "bonded tank" and is used exclusively for the bunkering of ships. The Indo-Burma Petroleum Co. also has a tank, situated at Seikgyi, near Rangoon. This tank has a capacity of 500,000 gallons and is now used for crude, although it has been used for fuel oil in the past and could readily be reconverted to that use. There are also six other tanks, having a total capacity of 4,500,000 gallons used for crude storage at Syriam and Seikgyi, which can be converted for fuel oil storage if necessary. "Liquid fuel distilled" (L. F. D.) constitutes about 10 per cent of the total fuel oil consumed; the remaining 90 per cent is "bunker fuel." No docking facilities are provided and all ships taking on fuel direct from the fuel storage tanks are obliged to moor about 200 yards from the tanks.

INCREASES CAPITAL

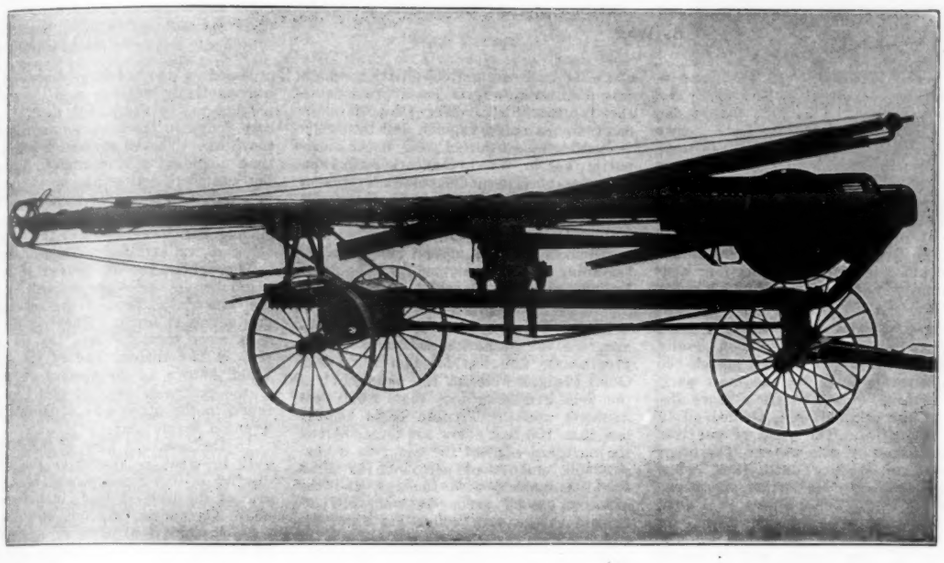
AUSTIN, Tex., Jan. 3.—The Hughes Tool Co., of Houston, Tex., has increased its capital stock from $300,000 to $2,000,000 all paid in, and will enlarge its plant.

Chartered: New York Oil Co., Marie, capital $22,500; incorporators, J. K. Hughes, Mrs. Annie Hughes, C. W. Kennon, Jr.; Peerless Refining Co., Dallas, Tex., capital stock $100,000; incorporators, F. R. Schneider, T. W. Sowell, T. A. Knight.

ENLARGE BURBANK TANK FARM

The Phillips Petroleum Co. is adding to its large tank farm in the Burbank Field by the construction of three more 55,000-bbl. tanks. The new tanks are being erected on the west half of the northeast of Section 14-27-5, in the north end of the field.

SAMSON OF OLD



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Say you saw it in The Oil and Gas Journal

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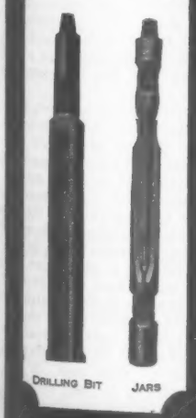

THE LARKIN LINE includes:

Patent Hook Wall Packer—strongest, safest and most simple self-supporting wall packer on the market;
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Patent Improved Sand Pump—20 feet long, flush outside, of uniform, Cold-Drawn "SHELBY" Seamless Steel Tubing.
Never-Slip Pipe Grips—least expensive, swiftest and simplest device made for putting in casing.

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Large stocks, ready for prompt shipment, of all packers known to the trade.
Packers built especially to suit particular requirements.
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See *The Larkin Line* at any of the leading supply stores.

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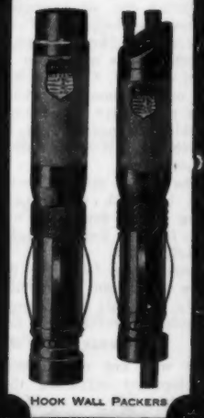
Our new Bulletin No. 25 describes *The Larkin Line* Ask for it now.



SAND PUMPS

PACKERS

General History of Indiana Oil Fields

Trenton Rock Fields Interesting to Operators Who Wonder if They "Will Ever Stage a Come-Back."

By Whit

Will the one-time famous Trenton Rock oil fields of Indiana come back again?

This is the question that has been put to the writer on many different occasions during the past few years, with a request that a resume of the old field be given in detail for the benefit of the old-timers and to show and pave the way for the operators of today by giving them past knowledge of years experience. The writer's opinion of Indiana is that there is much virgin territory that has never been touched by the drill. Indiana as an oil field has only been scratched over.

It is not only the Trenton Rock area of Indiana that produces oil; there are sections outside the Trenton Rock that are producing oil in commercial quantities and have been for years past. There are known fields in different parts of the State, as follows:

1. The main Indiana Trenton Rock district.
2. The Jasper County corniferous limestone district.
3. The Martin County Loogootee district.
4. The Terre Haute district in Vigo County.
5. Princeton district in southwestern Indiana, in the Wabash Valley.
6. Sullivan County shallow sand fields.
7. Spencer County Field along Ohio River.

Early Days of Indiana Oil

The development of the oil resources back in the latter '80's and early '90's opened up a new era of prosperity in the State of Indiana, and it is scarcely an exaggeration to say that the petroleum industry exceeded in value any other industry in the State at that time.

The discovery that there were underground reservoirs of crude oil of immense capacity meant much more to Indiana than did the discovery in Pennsylvania in '59 and in Ohio in '84.

Indiana's first oil excitement was in 1862, when oil springs were found on Otter Fork and West Fork and in the hollows tributary to them, in Crawford County. There were quite a number of springs from which small quantities of oil could be collected. The oil rock can be found in many places. At one place on Otter Fork the bed of the creek is a soft black sandstone, or shale, which contains more than 30 per cent of oil.

During the oil excitement of 1862-66 oil seekers flocked to Crawford County. Several wells were drilled, but oil in paying quantities was never found. On the farm of J. J. Clark a well was drilled, but only a small quantity of oil mixed with salt water was found. At 408 feet in this well natural gas was found, and at 648 feet salt water and a small amount of petroleum.

The second oil excitement in the State was in 1865, when an artesian well being drilled for water at Terre Haute, Vigo County, found petroleum at a depth of 1,630 feet.

During the following five years three more wells had been drilled in that locality, and all found copious quantities of sulphur water, with more or less oil.

Phoenix Well of 1888

It was not until 1888 that the oil development attracted the attention of operators. It was on May 6 of that year that the Phoenix well was drilled in and for a dozen years yielded an average of 1,000 bbls. or more per month.

The oil in the Phoenix well was found in the corniferous limestone which underlies the black Genesee shale. When the drill struck the oil-bearing stratum the flow was so great that quite a lake of oil accumulated around the derrick. The tools were pulled from the hole, and a solid stream of oil shot out nearly to the crown pulley. This flow shortly decreased, and in a few months had reached an average of about 30 bbls. per day, which it maintained for a very long period, as it was producing some oil only a few years ago.

The result of this strike was that hundreds of operators from far and near flocked to Terre Haute. Real estate almost doubled in price. Twenty-four new companies were formed, 18 of which made locations.

A dozen or more wells were put down to the required depth within a 3-mile radius of the Phoenix gusher, struck the proper stratum and, for the most part, found nothing. Two, within a short distance of the original well, yielded oil in small quantities. The yield of one was soon overcome by salt water. The other continued to produce until 1894, when it was abandoned. No further operations were made in the Terre Haute Pool until 1899, when two wells were put down. In one, about 2 miles northwest of the Phoenix, oil was found, and it would have been a 15-bbl. producer but remained shut in on account of litigation. During 1902 another well was drilled that showed a flush around 30 bbls.

Trenton Rock Districts

The great bulk of Indiana's petroleum has been derived from the Trenton limestone formation in Wells, Blackford, Jay, Adams, Grant, Huntington, Madison, Marion, Miami, Delaware, Randolph, Hamilton and Wabash Counties. This area encloses approximately 1,300 square miles, which includes Indiana's principal oil pool. It lies in a general east and southwesterly direction and joins the one-time great Indiana natural gas area lying to the south and west of the field.

The general surface is level and free from any elevations of any magnitude, there being absolutely no surface indications of oil or gas. The entire area is overlaid with glacial deposits of a usual thickness of from 50 to 250 feet, topped with a rich, loamy soil. There are no rock outcroppings noticeable through this district excepting along the bottom of streams, where the erosive action of the water has uncovered the top layers of the Niagara limestone, a massive, heavily bedded rock formations of the Silurian age.

The Indiana Field is not an extension of the Ohio Trenton Rock district, which was discovered several years previous to the Indiana Field. The Ohio development was extended rapidly, and test wells drilled to the south and west of the original strikes in Wood, Hancock and Allen Counties of Ohio indicated an extension toward the Indiana State line, the result being that a test well was drilled at Eaton, Delaware County, in 1885, which resulted in a large gasser, marking the beginning of the development of the great Indiana gas and oil field.

Less Depth Than Ohio

In the Trenton Rock district of Indiana, the oil formation is found at approximately 250 feet less depth than in Ohio, the gas wells in the main part of the field averaging less than 1,000 feet in depth and the Trenton being usually less than 100 feet below sea level. Along the northern edge of the gas area a considerable amount of petroleum is often found associated with the gas, and the attention of oil producers was thus attracted to the area which has since become known as the great Indiana oil pool.

The Indiana oil field extends over a large area, commencing with the Ohio line as its eastern boundary and extending west and northward approximately 50 miles into the central portion of the State. On the north of the principal oil pool will be found a great area in which the oil formation has been filled with salt water, thus making it an impossibility for the oil reservoir to contain oil in commercial quantities, except in certain isolated pools, where the terrace structure, or slight anticlinal folds, may have entrapped the oil and gas. The general dip of the Trenton toward the north has, with the exception of the disturbance before mentioned, given a uniform path for the oil and gas to concentrate itself in the higher portion of the limestone formation.

Geological Structure

In studying the geological structure of Indiana it will be found that a large anticlinal flexure is noticeable, commencing at the southeastern corner of the State and running in a northwesterly direction, this uplift being known to geologists as the Cincinnati arch, the apex of the arch being located near Cincinnati.

Owing to the close texture of the Trenton limestone in the southern half of Indiana the oil and gas has been imprisoned in the territory embraced in a comparatively small area in the northern portion to the State, but production has been found in the most southern point of the State. The oil formation was at one time no doubt a close-grained limestone, but chemical action has so changed the upper 300 feet of this formation that it became a good reservoir for the storage of oil and gas, large areas of the formation being of an extremely porous nature.

Throughout the oil district of Indiana a number of levels are noticed, at which the greater portion of the oil and gas production is found. These in the early days were termed "pays" by the operators in the eastern end of the Indiana Field, known as the Geneva district, all of the profitable pays at that time being found in the upper pay of 60 feet of the Trenton formation.

In the southern part of the field, notably in what is known as the Camden district in Jay County, and also in several of the isolated pools in the gas area near Alexandria, Marion and Hartford City, the principal pays were found from 80 to 200 feet in the Trenton, the upper portion of the formation in these districts being filled with natural gas at considerable pressure.

Wasted Gas

Owing to the necessity of wasting this gas in those days in producing oil from these wells stringent laws were passed by the State authorities restricting operation in what was known as gas territory. This at that time retarded development work in the gas district to a considerable extent, there being no question in the minds of many of Indiana's most experienced operators that the gas area would, at some future date, become valuable as oil-producing territory. This has been discovered during the past few years by the opening of the Hotmire Pool in Jay County along the Jay-Randolph County line, and only a short distance from what was a remarkable gas field in the early days, and there is still plenty of the same kind of territory yet virgin of the drill.

In the principal portions of the Indiana oil field natural gas was invariably found associated with the oil, but not in sufficient quantity to justify the use of the wells as gas producers alone, the value of oil production being far in excess of any value that could be placed on the gas produced; in fact in many of the older sections of the field properties on which from 10 to 20 wells were drilled did not provide enough gas from all of them to furnish fuel for the operating plant.

By careful management, however, many of the more prominent oil producers of the State were able so to connect their various producing properties as to supply an ample quantity of natural gas for fuel, gas engines being used almost exclusively in the older portion of the district for pumping purposes. Many of Indianas' largest oil-producing wells produced large quantities of salt water with the oil, and in some cases wells required the most vigorous pumping, extending over long periods of time, before any indication of oil were noticed from the well. These salt water wells, as they are termed, resulted in most cases in very profitable producers of oil, and amply reward the patience of the operator.

Structural Feature of Indiana

The surface elevations of Indiana vary from about 375 feet above sea level along the Ohio River in Vendenburg and Posey County, to 1,250 feet or more above in Randolph County. There is, therefore, a difference of about 900 feet in the ex-

(Continued on Page 116)

INSTITUTE DIRECTORS TO DISCUSS NEW OIL BOARD AT ATLANTIC CITY

NEW YORK, Jan. 3.—The board of directors of the American Petroleum Institute will hold a meeting at Atlantic City on January 12. No official announcement of the meeting has been made but it is understood the directors have decided to advance the date of the Colorado Springs meeting, which was scheduled for February 9, for the discussion of the Doherty unit plan of development.

The decision for an earlier meeting at an eastern point was brought about by President Coolidge's appointment of the Federal Oil Conservation Board. It is expected that the directors will discuss means for the industry cooperating with the oil board. Those familiar with the developments at Fort Worth when Henry L. Doherty offered to present his unit plan of development and with subsequent events look for the directors to engage in some lively discussion of the Doherty plan and it is understood Mr. Doherty will be prepared to go thoroughly into his proposals although his real development and furtherance of his program will be pushed, it is believed, before the oil board when it begins hearings.

No definite information is available as to the Atlantic City meeting but it is believed that the result will be the formation of a committee or committees to suggest or work in cooperation with the Oil Conservation Board and to gather information relative to the industry. The result may be the appointment of a committee somewhat similar to the institute's stabilization committee which consisted of Messrs. Beaty, Marland, Doherty, Bedford, Davis, Guiberson, Donnell and Welch, this committee took up various plans for stabilization, including the Doherty plan, and, according to Mr. Beaty, chairman of the committee, the latter plan got no converts.

Uniform Lease Form On All Indian Lands Has Been Approved

WASHINGTON, D. C., Jan. 5.—The fight of the Mid-Continent Oil & Gas Association for a uniform type of oil and gas lease ended successfully when Secretary of Interior Work approved a uniform type of lease applicable to all restricted allotted Indian lands.

The form is to take the place of three different forms heretofore used, one applicable to lands of members of the Five Civilized Tribes, one to lands allotted to Indians of the Kiowa reservation and the other a general form applicable to all of the restricted allotted lands wherever situated.

The new form not only contains provisions more advantageous in many respects to the lessor and lessee but has been made to conform to the commercial oil and gas lease so far as the basic difference between the two forms will permit.

Printed copies of the new leasing form will be furnished superintendents of Indian agencies throughout the country in the near future with instructions to put in active use.

The House Committee on Indian Affairs has been asked to approve a program of legislation to make clear the contract relations between white lessees and Indian lessors. Lack of clarity has led to the filing of thousands of suits in Oklahoma Federal and State Courts and has acted as a deterrent to the development of the State.

One of the proposals is for an act providing that the statute of limitations of Oklahoma shall apply as a defense to actions brought in the United States Court for the recovery of land patented in severalty to the members of any tribe of Indians.

It is argued that as present no lessee is protected against additional suits, no matter how many suits he may have defended and won. Sometimes land is leased and after years have elapsed it becomes valuable and there are sometimes a dozen suits filed by Indians against the lessees. Relief is sought by both agricultural and mineral lessees of land. Another relief sought by agricultural and mineral lessees applies to the court method of handling the conveyance of land belonging to dead allottees of the Five Civilized Tribes.

The present law provides that no conveyance of any interest of any fullblooded Indian in land deeded allottees shall be valid unless approved by the County Court of the county in which the deceased allottee resided. It is claimed that in numerous cases where such land afterward became valuable suits were filed to show that the Indian did not live in the county where the cases were settled. It is proposed that the County Court in the county where the land is located shall have jurisdiction.

A third measure to clarify contract relations provides that in any law action in either Federal or State courts in Oklahoma to which a restricted Indian of the Five Civilized Tribes is a party any one of the parties to the action may serve written notice of the pendency of the suit upon the United States District Attorney for the district in which the land is located and unless the United States intervenes as a party to such suit within 30 days after service of such notice the United States shall be as completely bound and stopped by the final judgment in such suit as if the United States had been a party thereto.

N. LOUISIANA-ARKANSAS

(Continued from Page 78)

The Stovall Drilling Co.'s No. 1 fee is making 10,000,000 feet of gas and waiting orders at 2,280 feet, Section 37-21-4e.

Ouachita Parish

Morrison and associates are down 1,200 feet in No. 1 Glazier, Section 37-19-4.

The Palmer Corp. set liner and is bailing No. 2 Morgan at 2,195 feet, Section 21-19-5e.

Southern Carbon Co. set 6-inch at 2,155 feet in No. 42 fee, in Section 7-19-5, and in Section 31-19-5 set 10-inch casing at 195 feet in No. 44 fee.

Standard Carbon Co. has rig up for No. 1 Swartz, Section 6-19-5. United Oil & Gas Co. is down 2,170 feet in No. 2 Cole, Section 35-20-4e. J. P. White and others have a fresh water flow at 255 feet in No. 1 Jones, Section 6-16-15.

Union Parish

Jones-Walker Oil Co. is drilling shale at 2,110 feet in No. 1 Feazel, Section 6-19-2e, between Monroe and Farmerville.

Winn Parish

Galloway & Arrandale shut down No. 1 McCarty at 1,600 feet, Section 5-12-1w, 10 miles northeast of Winnfield.

Arkansas—Cleveland County

Rhodes and associates are rigging up a well on the McTwiston lease in Section 36-9-12.

Columbia County

Arkansas Fuel Oil Co. is down 50 feet in No. 1 W. E. Hardy, Section 1-19-22.

Kentucky-Arkansas Petroleum Co. is moving in rig for No. 1 Peter Doss, Section 29-19-20.

Ten miles southeast of Magnolia, the Magnolia Development Co. is rigging up No. 1 Phil Lindsay, Section 30-18-19.

Magnolia Petroleum Co. is drilling sand rock at 2,600 feet in No. 2 Watson, Section 36-15-20. Seven miles south of Magnolia Phillips and associates shut down No. 1 Davis at 2,730 feet, Section 14-18-21.

Drew County

Rhodes and others started drilling a second well on the Harris lease, in Section 5-13-16 and after setting 10-inch casing drilled to 1,400 feet.

Nevada County

Humble Oil & Refining Co. is rigging up to drill No. 1 C. A. Fincher, Section 6-15-23.

Zing and others are down 1,160 feet in No. 1 Graves, Section 22-10-23.

HARVEY N. HILL DIES IN KANSAS CITY, MO.

Harvey N. Hill, aged 81 years, died at the home of his son, Rollin V. Hill, Kansas City, Mo., December 29. Mr. Hill was one of the pioneers in the oil industry in 1865, being identified with the oil excitement at Petroleum Center. Tarr Farm, Shamburg, Pithole, Pleasantville and Titusville, in Pennsylvania. In 1874 he was telegraph operator in charge of the pumping station at National Wells.

Mr. Hill became identified with the Bradford Field in 1878 as proprietor of the Titusville House, one of the first hotels in that city. Later he drilled the oil wells on the Dikeman farm, among the first wells in the Bradford Field, and operated them for several years. He was a member of the Bradford Oil Exchange and the Producers Petroleum Exchange.

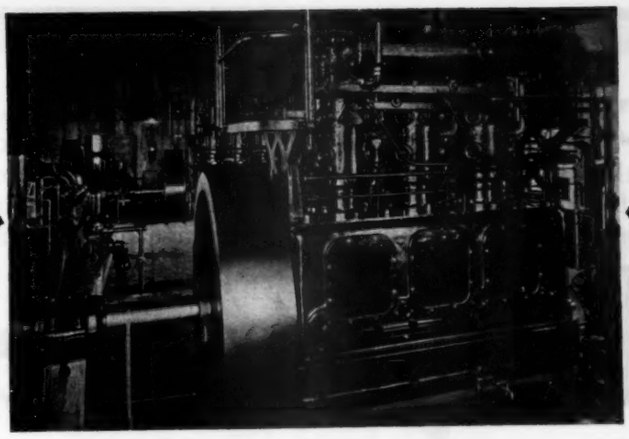
In 1884, the deceased prospected in the Tiona Field, having production on Six Mile Creek. In 1886 he went to Findlay, Ohio, and was one of the early producers in that field. In 1892 Mr. Hill returned to the Tiona Field, making his home in North Clarendon, Pa., until he retired.

NEW FIRMS CHARTERED

AUSTIN, Tex., Jan. 3.—Chartered: Eighteen Petroleum Co., Mexia, capital stock $50,000; incorporators, J. K. Hughes, H. F. Mace, C. E. Moberg. Twenty Five Oil Co., Mexia, capital stock, $10,725; incorporators, J. K. Hughes, W. S. Banks, A. L. Hollister. B.-K. Oil Co., Austin, capital stock, $20,000; incorporators, C. H. Brownlee, Houghton Brownlee, Sam N. Key.

Permits granted to do business in Texas: Hikok Producing & Development Co., Toledo, Ohio, capital stock, $10,000; Texas headquarters Cisco, R. L. Ponsler, State agent Lucey Petroleum Co., Wilmington, Del., capital stock 100,000 shares non par value; Texas headquarters, Dallas, J. F. Lucey, State agent.

The Houston Gas & Fuel Co., Houston, Tex., amended its charter, increasing its capital stock from $2,050,000 to $2,550,000.



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INDUSTRY BEGINNING TO REALIZE SCIENTIFIC RESEARCH NECESSARY

(Continued from Page 90)

known problems that have a direct bearing upon the petroleum industry. His vision of achievement related to production, refining, transportation and storage and the marketing of these products. Since 1919 he has frequently pointed the way and urged activity along this line of enterprise. It is well known here that he met with disappointment.

Government Active

Director H. Foster Bain, of the United States Bureau of Mines, Director George Otis Smith, Dr. David White, K. C. Heald of the United States Bureau of Geology, and scores of others in these bureaus, the Bureau of Standards and in other branches of the Government have steadfastly, during many years, been advocates of larger research for the petroleum industry. In this line of thought, there have been so many active minds in these branches of the Government and in universities and elsewhere that no one pretends to be the original advocate of this idea. Unification and coordination, together with a constantly broadening scope of activity, have been advocated by them. The difficulty under which they have suffered has been the lack of adequate popular support and understanding. The stage is set and the time is ripe for a movement to realize the ambitions of these men that have been planning so many years.

The Oil and Gas Journal, in becoming an instrument in forwarding a movement by which these advocates of advanced technical knowledge of the oil industry can be aided, will serve a most useful purpose to the industry and to the country. The difficulty that has been encountered to a large extent lays at the door of Congress. The investigation of scientific problems, although they have a powerful effect upon business enterprises, generally appear so remote in the probable production of results as to discourage business men. From a business point of view, it does not appear to be sound to devote money for research that generally benefits the industry at large rather than the people who put up the money. Invention proceeds actively because the inventor is protected in his rights to the profits growing out of his invention over a long series of years. In the very nature of the case, this principle of protection cannot be extended to the scientist in many of his operations, because there is no immediate and defined profit flowing from his discovery. Had it been possible to provide such protection, for purely scientific investigation, there seems little doubt that it would have been provided for along with the protection given inventors.

For these reasons, is is not so strange that the American Petroleum Institute could not be dragged into the realm of purely scientific investigation, although its results would have benefited everyone inside and outside of the petroleum industry. Such investigation is, in fact, one of the few functions that can best be financed by the people at large through congressional appropriation. At the present moment there is an overwhelming outcry here in Washington for economy and along with many very wise curtailments have come restrictions affecting the scientific bureaus of the Government. It only needs an understanding to convince Congress that expansion and not restriction would be the wisest economy in treating these branches of governmental activity, but the master of the budget lops off something here and there which means disorganization to progressive research and no one seems to care. It means disorganization of a highly trained personnel and a scattering of the most efficient investigators at a time when their labors are on the eve of showing results. Harping criticism and hostile onslaught are applauded by many people as indications that their legislators are taking care of the interests of the country. There appears to be little interest or approval to encourage men in Congress to work in a constructive way for the building up of activities that can only be properly sustained by the Government and which are a benefit to everyone.

Discovery of Helium

When helium was accidentally discovered in the corona of the Sun, it was regarded as a highbrow achievement of no more practical interest that the most vague and remote idea evolved in the brain of a philosopher. When Benjamin Franklin flew his kite and drew lightning into a glass bottle to demonstrate its identity with electricity, the same view was taken of his achievement by the people of his day. Yet that discovery is today lighting the world and providing much of its motive power. The remote helium in the corona of the Sun led the way to the discovery of the same element on our earth and is today the one lighter than air gas that can be safely used in commercial transportation in the air by heavier than air machines. It is the one discovery that removes most of the danger from this kind of navigation and it is believed that it will yield, in financial profit, almost, if not as great results as has gasoline as a byproduct of the oil industry. Its use is extended so that today it is announced here for the first time that Dr. David White is using it as the most efficient neutral gas for experiments he is conducting, these experiments having a direct bearing upon problems that confront the oil refiner.

Over two years ago Doctor Manning assembled a large number of subjects having a direct or indirect bearing upon the oil and natural gas industries, all of which more or less have a bearing upon improvements of methods. There were seven outstanding problems relating to production and as many more problems relating to transportation and storage. Twenty-nine major problems and many minor ones had a bearing upon refining. Twenty-two related to marketing and utilization of oil. Five affected colloid chemistry and others were suggestions of the American Chemical Society. As Mr. Manning stated, this list might be supplemented almost indefinitely from the fields of fuel and lubrication. Anyone who studies this list of suggested investigations will wonder that they have been so long delayed and that such a great industry as petroleum should have consented to remain in ignorance on these subjects.

Rockefeller and Research

John D. Rockefeller always entertained a high respect for scientific research and some of his projects were looked upon with great doubt by many "practical" business men who were his associates. When the Lima Field was brought in it was looked upon as doomed by the presence of sulphur in the oil. This oil actually sold, or at least was offered for sale, at 10 cents per barrel with no takers. At a meeting of the Board of Directors of the Standard Oil Co., Mr. Rockefeller, as chairman, was responsible for a motion being made and carried for an appropriation of $100,000 for the purchase of oil land in the Lima Field. At the next annual meeting when the Standard's representatives reported upon the expenditure of that fund, he acknowledged that it was practically intact, because he had not the heart to waste it in so unpromising investments. It is narrated that Mr. Rockefeller listened to this report without any show of emotion and then by his suggestion another motion was made and carried doubling the appropriation for the purchase of leases in the Lima Field. He had confidence that some method could be devised for the removal of the sulphur from the oil and he was instrumental in setting in motion experiments looking to that end. Anyone at that time, with the possession of a comparatively small amount of capital, could have achieved wealth by purchasing in the Lima oil fields, but then, even more than at present, men lacked the imagination necessary to have confidence in the discovery of methods that today seem commonplace.

Geologists Ridiculed

In the early days of the industry, the oil geologists were often the butt for the ridicule of the humorist. The "practical" oil men had no confidence in his knowl-

edge of geology as being likely to make him a better judge of the places in which oil could be found than were men who made no pretensions to such knowledge. About 10 years ago, the writer was present at a luncheon given by Dr. David T. Day, the distinguished geologist of the United States Geological Survey, in honor of the late Patrick C. Boyle. On that occasion, Mr. Boyle spoke in reminiscent manner of the early days of the oil industry with which he was so intimately connected. He referred to the oil geologist and the pessimistic attitude that was then generally prevalent in respect to his views on oil locations. He ended by paying high tribute to the oil geologist. That adverse view had long ceased to exist, he said, and the oil geologist had come into his own as a most valuable adjunct to any production enterprise.

Mr. Boyle's statement was typical of the progress that has been made in the public acknowledgement of the utilitarian character of scientific investigation. Achievements in research work leading beyond hitherto unknown realms of knowledge have caused people to give more and more attention to the value of science in the practical development of an industry.

As an effort in assisting in the promotion of a widespread scientific investigation of petroleum and natural gas problems, the writer has taken up with the United States Bureau of Education a discussion of the propriety of that bureau sending out a questionnaire to all the great universities and other institutions engaged in studies relating to this industry. Such a questionnaire could bring back from hundreds of qualified men suggestions as to the best methods to be followed in coordinating and in promoting scientific investigation for the benefit of the petroleum and natural gas industries. They could be invited to state what subjects, in their opinions, should be investigated with a near or remote relation to petroleum. Undoubtedly such a questionnaire circulated by so important a branch of the Government would go a long way toward accentuating popular scientific investigation of this kind.

DEATH OF MAJOR SAVAGE

The death of Major Hugh Corby Savage, formerly of Belfast, Ireland, is announced from Johannesburg, South Africa. Major Savage was manager at Johannesburg for The Texas Oil Co. He had served in South Africa during the Boer War, and again joined up in the World War. In the course of the latter he saw service in East Africa, where he made the discovery of an oil well. With the assistance of a native, he procured samples, and made careful notes of the site. On demobilization he got into touch with The Texas Oil Co. at its Cape Town headquarters, and investigations were made by experts, as a sequel to which the company acquired the oil location, which has proved a very successful enterprise. As a consequence, Major Savage was invited to enter the service of the firm, in which he quickly rose to the responsible position of manager.

BRITISH VIEW ON MOSUL

That the oil fields of Irak and Mesopotamia are not a source of keen competition and bidding by British and American interests, at least at present, is the view taken by Brigadier-General Lord Thompson, former air minister of the British Labor Cabinet, as expressed in an interview in New York. He said the situation had been largely exaggerated. Lack of active competition, he said, was due to the enormous cost of laying pipe lines and of merchandising the oil, and the danger of raiding by tribes who roam over that territory.

NEW CHAIRMAN

E. R. Hughes, Republican, was elected chairman of the Oklahoma Corporation Commission December 29. This is the first time in the history of the State where a Republican has served in that capacity.

Loss by Evaporation And Its Prevention Compared to Cracking

Granting that about 600,000,000 bbls. of light oil will be produced in the United States this year and taking the Bureau of Mines' statement that 7½ per cent of the total crude production will be lost before the finished gasoline is shipped from the refinery, the volumetric evaporation will be 45,000,000 bbls. of the cream of the gasoline, writes J. H. Wiggins of Bartlesville, Okla., in Mining and Metallurgy. This is a conservative figure and is equivalent to 1,890,000,000 gallons. The real value of this liquid is at least 150 per cent of the value of an equal volume of motor fuel. At only 10 cents per gallon, the value lost is $189,000,000; at 15 cents per gallon, the loss is $283,000,000.

If 750,000,000 bbls. of light and heavy oil are produced here this year and the average price per barrel is $1.333, the gross return to producers will be $1,000,000,000 and the net returns about $200,000,000, if the cost of production is only $1 per barrel. Thus, the evaporation bill is about 20 per cent of the gross income and is equal to the net income of the crude oil producers.

Two other comparisons with popular phases of the petroleum industry will help give an adequate conception of the evaporation problem. These are: cost of preventing evaporation compared to cost of cracked gasoline and volume of gasoline evaporated compared to volume of gasoline manufactured from natural gas.

When gasoline is manufactured from heavy oils by the cracking process, there are two important divisions of the total cost of product; the manufacturing cost, such as plant cost, operation, maintenance, etc., and the cost of the barrel of heavy oil, from which the cracked gasoline is made. In preventing evaporation loss the cost first mentioned enters into the total cost, but the second cost is eliminated; that is, no charge is necessary for stock from which to manufacture the saving. A detailed analysis of these two costs on a large scale shows that the net income from a dollar spent in preventing evaporation loss from the lease through the refinery is twice the net income from a dollar spent in cracking.

In practice, evaporation can occur only by fresh air, or permanent gas, being in contact with the oil surface and by boiling. Of these, only the first applies to motor fuel (gasoline) or crude oil; boiling requires a higher temperature than is encountered for ordinary motor fuel or crude oil.

Fresh air in contact with a surface of oil acts much like a sponge and becomes saturated with gasoline vapor until the partial pressure of the vapor is equal to the vapor pressure of the liquid. As far as ultimate evaporation of the oil is concerned, 100 feet of fresh air over the oil surface is like 100 feet of perfect vacuum. The perfect vacuum would be filled with 100 feet of vapor and the total pressure in that space would then be the vapor pressure of the oil. Little has been published on vapor pressure of petroleum and its products but there are several interesting points in connection with vapor pressure that will bear discussion.

PURE OIL CO. BUYS PIPE

The Pure Oil Co. has placed an order calling for the delivery of 4,600 tons of 8-inch pipe, sufficient to lay a 60-mile pipe line in the Western oil fields. The company is credited with being in the market for pipe sufficient to lay 200 miles of line.

MEXICO POSTPONES OIL LAW

The Mexican Senate went into recess without passing the proposed oil law; consequently, unless an extraordinary sitting is convoked by President Calles, the present conditions will continue until September 19, next, when Congress again meets.

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MALONEY 'ALONE'

GENERAL HISTORY OF INDIANA OIL FIELDS

(Continued from Page 112)

treme elevations of the State. The average altitude is about 800 feet above the sea level.

Indiana Gas Area

The wide extent of territory included in the Indiana gas area is at the summit of a vast ridge running northwest and southeast, and which slopes off rapidly toward the northeast and southwest. This ridge extends entirely across the State. The largest accumulation of gas was found along the summit of the ridge rather than upon the sides in the early days of the gas boom. The ridge itself slopes very gradually toward the northwest. A straight line from Cambridge City, where the top of the Trenton limestone reaches its extreme limit of height, 174 feet above sea level, to Renssalaer, Jasper County, also on the summit of the ridge, will pass almost directly through New Castle, Anderson, Tipton, Delphi and Monticello. The following are the elevations of Trenton Rock at points named:

Cambridge City	174	feet above sea level
New Castle	120	feet above sea level
Anderson	66	feet above sea level
Tipton	127	feet below sea level
Delphi	350	feet below sea level
Monticello	338	feet below sea level
Renssalaer	158	feet below sea level

Early Developments for Gas

The Indiana oil district proper is embraced in portions of a number of counties lying northeast of the center of the State. The first gas well was located near Eaton, in Delaware County, and was completed in 1885. A good gas strike was made about the same time at Union City, in Randolph County, says the "Hand Book of Petroleum."

In less than two years the gas developments had assumed enormous proportions and a large number of manufacturing enterprises were started throughout the gas area. By June, 1887, it had been demonstrated that natural gas was to be found in commercial quantities in Wabash and Marion Counties; at Kokomo, in Howard County; at Jonesboro and Fairmount, in Howard County; at Portland, Red Key and Dunkirk in Jay County; at Eaton in Delaware County; at Elwood, Anderson, and other points in Madison County; at Noblesville in Hamilton County; at Greenfield in Hancock County; and at Muncie and Albany, in Delaware County.

A big gas well was completed in May, 1886, near Greenfield, in Hancock County. The first gas well at Kokomo was struck October 7, 1886.

Indiana's Early Oil Wells

The initial oil well in the Indiana Field was completed near Portland, in Jay County, in the winter of 1886; it showed some oil and a little gas, but was abandoned as an unprofitable well.

Numerous wells were subsequently drilled in the same locality with unfavorable results, until finally one on the William Newton farm, one mile west of Portland, proved the strongest gasser discovered to that time. Upon drilling through the gas strata it ran into a pay streak of oil. The oil was used to some extent for fuel purposes in that locality for several years. While burning oil for fuel at a drilling well on the James Penn farm, 3 miles west of Portland, a terrible disaster occurred, in which one of the drillers was burned to death. This well was owned by Benjamin F. Fulton, and when completed started at 35 bbls. a day. Another well was drilled on the Gilbert farm, on the same quarter section, in 1888, which yielded a large quantity of oil and some gas. This well pumped for many years.

Camden, now known as Pennville, 12 miles northwest of Portland, next got some roaring gassers. In 1887 test wells were drilled at Montpelier, in Blackford County, and Bryant, in Jay County, nearly all of which showed some oil and gas. The territory was not set up as an oil field until January 14, 1891, when Emmet Queen and H. O. Patch completed a 50-bbl. producer near Bryant.

Notwithstanding these early discoveries of oil in Indiana, the commercial development of the oil industry did not really have a serious beginning until 1891. The gas territory proved a more inviting field for capitalists, who devoted their energies to establishing manufacturing, and building up small towns and cities.

The oleaginous product of the Trenton formation was flowing forth at an enormous rate in the Buckeye oil fields, the product was much in excess of the consumption, and the prices realized offered little incentive for Indiana operators to engage in the oil business. Besides, the traces of oil here and there shown in the search after natural gas, and a numerous array of dry holes, led to the idea that the oil area of the Hoosier State was likely to prove of an exceedingly treacherous and spotted nature.

The first paying well drilled in Indiana was completed in June, 1890. The well was owned by the Northern Indiana Oil Co., and was located on the D. A. Bryson farm, in Chester Township, Wells County, near the hamlet of Keystone.

It started at 60 bbls. a day natural, and within three months had declined to 25 bbls. It was then shot, and by the process was increased to 90 bbls. per day, and it required nearly a year's time before it declined to its original production mark. Seven years later, the well was still producing 8 bbls. a day.

Keystone Drilling

The same company drilled several more wells in the vicinity of Keystone during the same year, but none showed oil in paying quantities and there were no further efforts made to develop the field until almost a year later, when Col. Tim Spellacy, now deceased, along with his associates, drilled a well on the Smith farm, adjoining the Bryson well. The writer stood within 100 feet of the Smith well, in company with the owners, when the shot exploded.

It was a beautiful sight, and the well flowed nicely after the shot. Colonel Spellacy spoke to the writer and said: "Isn't she a dandy? We have a certain gusher." It did gush for a few minutes, but blew itself out and never amounted to anything.

The second scene of operations in the State was on the Cory farm in Nottingham Township, Wells County, and several miles east of Keystone, where Edward J. Little, and his associates drilled a test well and got a big producer at the first attempt, the well starting at 250 bbls. This well held up remarkably good and when 5 years old was pumping 3 bbls. a day. The start given the field by the operations in 1891 resulted in the wide development which embraced parts of Wells Blackford, Jay, Adams, Grant, Huntington, Madison, Randolph, Miami, Marion, Wabash, Delaware, and other counties; the development in the latter several having occurred during 1897.

First Statistical Report

Operations were confined to Wells County the first year, and the growth of the field was slow. A report for June, 1891, showed three wells completed, with five drilling and four rigs up. This was the first monthly statistical report compiled of Indiana, and by the writer.

Previous to that time there had been 10 or 12 drilled, several being dry holes, the total production from the then producing wells, some six in number, being 900 bbls. for the month of June.

In July there was an increase of activity, there being 7 wells completed, while the runs for that month were quadrupled, being 3,400 bbls. From July to the end of the year 1891, the reports show that there were 35 wells completed in the Wells County district, and for the last month of 1891 the runs were 16,000 bbls.

In February, 1892, operations began in the famous Geneva Field in Adams County, which lies east of Wells County and borders on Ohio. The first productive well in this territory was drilled by Bolds Brothers, on the Shoemaker farm, in Hartford Township. It started at better than 100 bbls. daily production, and was the means of starting considerable work in that section. The field in Adams County has furnished some remarkable territory, and was for years confined to parts of two townships—Hartford and Wabash. In the former the average production of the new wells were above that of most Indiana territory, but in Wabash it has fallen below.

Geneva District

The reports for April, 1892, showed an increase in new work and production, caused by the Geneva district being opened up. Since then Blue Creek and Jefferson Townships were added to the producing area of Adams County.

Jay and Blackford Counties followed Wells and Adams as the scene of oil operations, and both proved highly productive. Jay being second only to Wells in importance as an oil producer. The productive territory in these two counties has been confined to Penn, Jackson, Bear Creek, Knox, Green, Wabash and Noble Townships in Jay County, and to Harrison, Licking and Washington Townships, in Blackford County.

The first well, as has been mentioned, to be completed in Jay County, was on the Penn farm, in Green Township, of Jay County, and did 35 bbls., and drilled in during 1887. No further operations for oil were made there until the latter developments of 1892 and 1893. The reports at the close of July, 1892, showed 17 new wells completed, with 13 drilling and 17 rigs up.

The runs took a jump that month also and reached 32,000 bbls. At the close of August, 1892, the reports showed 30 new wells drilled in, with 17 drilling and 14 rigs up, while the runs had almost doubled from July, being over 60,000 bbls.

Operations continued to increase and the territory widen out until the close of December, 1892, the monthly report compiled by the writer, showed 47 wells completed, with 24 drilling and 19 rigs up in the Indiana oil field. The runs for December took a jump, and ran up almost to the 140,000-bbl. mark.

New Counties Added

With the rapid growth of the field, new counties were added to the productive districts, operations eventually reaching over into Grant and Huntington Counties to the western edge of the field. In the former county operations became very active, oil being found in Van Buren, Monroe, Washington, Center, Franklin and Mill Townships, and in Jefferson and Salamonie Townships of Huntington County.

Operations were started in Grant County in the fall of 1894 by a well drilled by Bettman & Co., who drilled a couple of good wells and gave operations an impetus. In August, 1893 Little & Co. drilled a well in Van Buren Township, which started at 50 bbls., but it was drowned out by salt water and abandoned.

Another well was drilled by the same firm, but it, too, was small and abandoned. The first well which produced oil in Grant County was drilled by McBride & Co., near the typical oil town of Van Buren, for gas in 1890. The well made a small quantity of gas and oil, but, owing to a lack of pipe line facilities, it was abandoned. In the early days this district was remarkable for the small number of dry holes found and the quickness with which the wells declined in production on being drilled in. Of late years the oil is found in a lower part of the oil sand, and the staying qualities of the wells much improved.

Huntington County's oil producing area is small, being confined to Jefferson and Salamonie Townships. This territory lies on the northern edge of the gas belt and the oil area was later extended to quite an interesting area of the county.

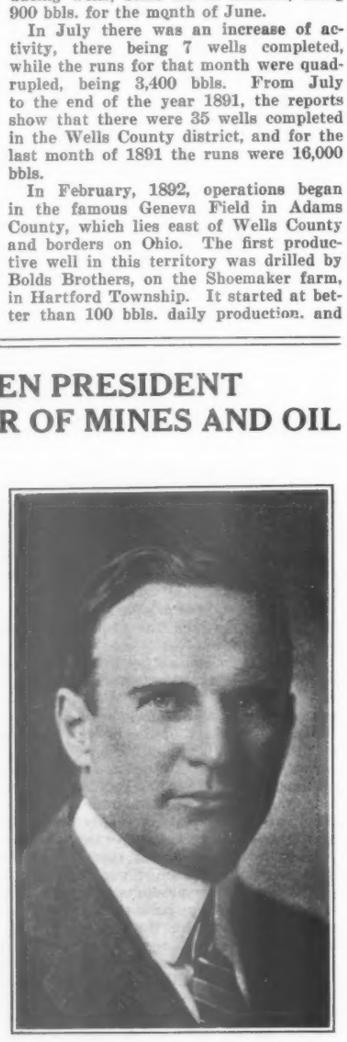
Reach a High Mark

During the year 1893 the operations in the Indiana fields reached a high mark and witnessed a remarkable degree of activity, which was maintained until the depression came in 1897.

There is a great scope of territory in Indiana which may be regarded as oil productive in prospective. On the border lines of a great gas belt developments

A. B. MAC BETH CHOSEN PRESIDENT OF CHAMBER OF MINES AND OIL

LOS ANGELES, Cal., Jan. 3. — Officers and directors for the coming year were elected at the annual meeting of the Chamber of Mines and Oil held last week, A. B. MacBeth succeeding A. C. McLaughlin as president. The incoming president, who has been a director of the Chamber for the past two years, is vice president and general manager of the Southern California Gas Co. Philip Wiseman and Chester W. Brown remain as vice presidents of the Chamber and M. H. Whittier continues as treasurer. The directorship consists of Lionel Barneson, vice president and general manager General Petroleum Corp.; Harry J. Bauer, president Pacific Gasoline Co.; Ward Blackburn, manager Ingersoll-Rand Co.; A. C. Dierickx, president Honolulu Consolidated Oil Co.; David Ewing, secretary and general manager Ethel D Oil Co.; E. B. Gilmore, president Gilmore Oil Co.; W. R. Guiberson, vice president Guiberson Corp.; Allard D'Heur, vice president and general manager Pacific Oil Co.; H. H. Hillman, vice president California National Supply Co.; W. M. Keck, Superior Oil Co.; F. R. Kenny, president Marland Oil Co. of California; Theodore Martin, attorney; W. C. McDuffie, vice president Shell Co. of California; A. C. McLaughlin, vice president and general manager Associated Oil Co.; E. J. Miley, president State Consolidated Oil Co.; Elmer E. Paxton, general manager Engels Copper Mining Co.; H. L. Payne, chemical engineer; R. L. Peeler, president California Petroleum; F. C. Ripley, manager Chanslor-Canfield Midway Oil Co.; Rush Sill, mining engineer; Robert E. Tally, general manager United Verde Copper Co.; Waller Taylor, vice president Llewellyn Iron Works; F. C. VanDeinse, general manager Ventura Consolidate Oilfields, and A. L. Weil, attorney. A committee was appointed at the meeting to decide upon the date for the annual banquet and make the necessary arrangements. Mr. MacBeth was born at Greenville, S. C., in 1873; graduated from Stevens Institute of Technology, Hoboken, N. J., in 1897; and from 1906 to 1909 he served as engineer for the Kansas City Gas Co. He was general manager of the Kansas Natural Gas Co. from 1909 to 1914 and has been vice president and general manager of the Southern California Gas Co. and the Midway Gas Co. since 1914. He is a director of the Union Oil Co. of California.



A. B. MacBeth

were made which show that perhaps the best oil producing area of the State has not yet been touched. The opening of the Hotmire Pool a couple of years ago, located upon the flank of the big gas fields of Jay County, shows conclusively that other pools of prominence still lie ready to be opened by the drill.

During the year 1897 three new districts were opened and considerable important territory placed in the probable productive area. The first and most sensational was the Alexandria district, Madison County, where the excitement broke out the last of April, owing to the strike made by the Lima Northern Oil Co. on the Nimrod Carver farm, in Monroe Township, 2 miles northeast of the town of Alexandria.

This well had a very heavy gas pressure, which caused the oil showing to appear much greater than it actually was, although the well started off at a little better than 500 bbls. per day. Excitement ran higher than in any district or during any previous time in the Indiana Feld, but died down proportionally quick, only to revive again later.

Alexandria Area

The Madison County territory at that time proved to be spotted and "flashy" owing no doubt, to the strong pressure of gas which was in the Trenton rock at that time. There is no doubt that the day is not far distant when some remarkably fine oil wells will be developed in the Alexandria area, and the territory is well worth testing out, as are many other spots over the area shown in the depths mentioned above of the Trenton below the surface and sea levels. They are a study of interest to all interested in the oil game, and by perusing them carefully, new fields might be developed, where in the early days there was but a showing.

Northeast of the Alexandria Feld 8 miles a pool of no mean magnitude was opened in Washington Township, Delaware County, and there is still a chance for a connection between the two pools.

At Broad Ripple, Marion County, small developments were made in Washington Township, during the last half of 1897, and while the area tested was small and the number of producing wells not over 20, the prospects for further development is good at that point.

During the latter half of 1897 the then famous Peru district came into prominence. It is 40 miles west of the main area of the oil field and was confined to Erie and Penn Townships, Miami County. The impetus to operations was given by a well drilled by the People's Oil & Gas Co. in July on a lot within the limits of the town of Peru. The first well started off at over 100 bbls. when put to pumping.

Peru District

No great interest was stirred up by the new strike, and it was not until three or four more wells were drilled, the yield being as large or larger than that of the initial well, that the excitement began. Owing to the surrounding territory being divided into town lots, the opportunity for rapid development was excellent, and in no equal area of Indiana were so many wells drilled in an equally short time. The completions in October and November of that year reached nearly 150 for the two months, while the production was swelled rapidly, reaching about 100,000 bbls. for November. This month witnessed the flood tide of operations and production, however. The producing area soon lapsed into a condition of inactivity. Its record will be a remarkable one, and in little danger of being paralleled in the Trenton Rock Feld.

The seasons of 1898 and 1899 were active. The price of oil in 1898 was such that operations were confined mostly to the old territory.

The year 1899 was not characterized by any great strikes or new developments of importance in the oil fields of Indiana. During the first half of the year the rapid rise of price in iron pipe and most other supplies used in oil production deterred many prospective wildcatters and even old operators from putting down new wells.

The price of Indiana crude oil remained almost stationary (74 to 76 cents) until June, when it began slowly to creep upward. By July it had reached 82 cents, and on September 1, was 90 cents. On September 15 it had advanced to 99 cents, and soon thereafter climbed above the dollar mark. On January 1, 1900, it was selling at $1.12 per barrel.

Increase in Activity

This advance in price in the latter half of the year caused a corresponding increase in activity among the operators. Wildcatters, too, began to be more restive, and cast a longing eye on territory which promised a chance, however remote, for a return of their money.

As a result, a number of tests were put down in various locations a few miles cutside of the limits of the main field. Jackson and Chester Townships, in Wells County, developed in 1899 more new wells which proved excellent producers than any other similar area in the main field.

The result of the drilling in 1899, in part, fulfilled the prediction of the finding of a connecting link between the Indiana-Ohio fields. In September a well was drilled on the Dudgeon farm, in Section 27, Blue Creek Township, Adams County, and only 300 feet west of the State line, which had an initial production of 75 bbls. In November another good well was drilled in on the Hablet farm, in the same section. Two small producing wells were also located 2 miles west, in Section 29 and two or three just across the Ohio line. On December 20 the field contained seven wells, with a total daily production of about 90 bbls. The southernmost well in this field is several miles north of all former wells drilled to find the connecting link between the two States.

Three Mile Extension

On January 10, 1899, a well, which started at 250 bbls., was drilled on the Storms farm, in Section 19, Washington Township, Blackford County, thus extending the known field 3 miles to the southwest. A number of other good producers were afterward located in the same and adjoining sections, so that the main field was extended to the western limit of Blackford County. Other fair producing wells just outside the main field were located during 1899 in Section 10 and Center Township, Grant County, and a good one was finished in December in Section 19, Salamonie Township, Huntington County.

In this year a wildcat well, which produced a good showing of oil and much salt water, was drilled near La Fountaine Liberty Township, Wabash County. Another well, which filled up with 300 feet of oil, and would produce 15 bbls. daily, was finished in wildcat territory near Hagerstown, Wayne County, 50 miles south of the heart of the main field, and 40 miles southeast of Alexandria. The nearest producing wells to the venture were located near Parker City, in Randolph County.

The area of the Broad Ripple Field, in Marion County, was not materially increased during 1899. Out of a dozen wells drilled in only one proved a failure. The production from this field for the year totalled 51,000 bbls., as against 102,087 in 1898, a loss of just 50 per cent.

Anti-Gas Waste Law

On account of the anti-gas waste law, no oil was produced in the Alexandria Field during 1899. An appeal from the decision of the Indiana Supreme Court was taken by the oil operators and was argued before the United States Supreme Court the latter part of December. What this same field will develop today, now that the gas has gone, is unknown, and the only way to determine it is by giving the once productive area a further testing out.

Two additional fields were developed in Indiana during 1899, at quite a distance from the main Trenton rock areas. Oil in both these fields was found in the corniferous limestone or a correlative sandstone, the latter being the same stone in which oil was discovered at Terre Haute. The original source of the oil in each—as at Terre Haute—is undoubtedly the New Albany or Genesee shale.

One of the new fields was near Loogootee, on the Baltimore & Ohio Southwestern Railway, in Martin County. Five wells were put down by a local company. The first venture was made just south of the town to a depth of 1,682 feet, and produced only a slight showing of oil. A second and third well was drilled each a quarter of a mile farther eastward than the preceding—but only to a depth of 530 feet, when gas was struck. In October these wells showed a rock pressure of 200 pounds per square inch and yielded about 400,000 feet of gas each per day. The fourth well was put down about 90 rods east of the No. 3 venture, and that point showed the sand stratum to be 16 feet in thickness. The well yielded both gas and oil—the latter flowing at the rate of about 20 bbls. daily. The oil was dark in color and had a specific gravity of 32 degrees Beaume. A fifth well, only 700 feet east of the fourth, was a dry hole. Loogootee is 552 feet above sea level and the depth to the Trenton is about 1,900 feet.

Jasper County

The other prospective field was in Gillan Township, Jasper County, about 6 miles west of Medarysville. Oil in small quantity was found in eight wells at a depth of only 105 to 110 feet below the surface. The oil is very dark and heavy, the specific gravity being about 24 degrees Beaume, and was sold mainly for lubricating purposes. On January 1, 1900, the total yield of the eight wells was about 40 bbls. a day.

No great strikes were made in the main Indiana Field in 1900, but new developments increased the area of the field so that it extended from the Ohio-Indiana line, westward to a point a few miles west from Marion, Grant County, and from Warren, Huntington County, south at a point south of Hartford City, Blackford County. At this time the field at its greatest length was about 55 miles, and its extreme width about 25 miles.

In 1900 there was greater activity shown in development work over all the old producing regions of the State, there being a total for that year of 2,963 wells completed, and up to that time the greatest year for Indiana development. In 1902, there were 2,586 wells completed and the actual production handled by pipe lines for that year averaged between 17,000 and 20,000 bbls. daily. On January 1, 1902, Indiana crude was bringing 80 cents per bbl. and on December 31 of that year, the price wos $1.10 per bbl.

With the completion of 2,914 wells in the Indiana fields during the year 1902, it goes down in history as the greatest year in the history of oil and gas development of the Hoosier State. In 1903 a total of 2,386 wells were completed and during 1904 a total of 3,166 wells were brought in. The development work started on the downward course on account of the failing of the natural gas supply, and in 1905 but 1,922 wells were finished, followed by 1,185 wells in 1906, and the smallest year since the field became a commercial producer was in 1912 when only 89 wells were completed. The largest number of completions reported from the State between the years of 1906 and up to the present time, was in 1914 when 744 wells were brought in.

Few new pools have been opened in the State during the past 20 years. The most important was the DeSoto and Albany Pool, in Delaware County, and the Hotmire Pool of recent date in the southern part of Pike Township, Jay County.

Since the operations were first started for oil and gas in Indiana there have been up to the close of 1923, a total of 38,432 wells completed at an average cost of $2,000 a piece, which represents for wells alone the enormous amount of $76,864,000, to say nothing of the millions invested in pipe lines, pump stations, iron storage tanks, and the army of men employed in the various branches of the industry, such as leasers, pumpers, gaugers, tank strappers, roustabouts, farm bosses, rig builders, drillers, tool dressers, tank builders, foremen, clerks and many other vocations, which all go to make up a big payroll. These employes usually command above the average wages, and in most every case they circulate the money, which represented so much among the Indiana merchants in the days gone by. One leading feature of the Indiana Field is that it is still in its infancy, there only being a few counties comprised among the listed ones, and they are only partially drilled over. Many other counties will fall in line before the territory of the State is thoroughly drilled. There is no field east of the Mississippi River that has such a bright future as has the "Great Indiana" oil field. The once famous gas belt in time to come will eventually develop into an oil producing territory, as was the case a couple of years ago when the Hotmire Pool, in Jay County, proved a fine field.

Thirty-Six Years of Indiana

But very few people are aware of the vast number of wells completed for oil and gas since the completion of the first venture for gas in Indiana over 36 years ago. Since that time records compiled by the writer show that there have been 38,432 wells completed, of which 30,090 were oil producers and 8,342 were either dry holes or gas wells. Of the oil producing wells there have been 22,848 of them pulled out and abandoned up to the close of 1923, leaving a total of 7,242 wells producing or not accounted for.

These wells were completed by years as follows:

Year—	Total Comp.	Oil wells	Dry holes and gas wells
Prior to 1892	1,306	405	901
1892	296	220	76
1893	665	579	146
1894	1,808	1,413	395
1895	2,711	1,957	754
1896	1,537	1,185	452
1897	1,041	761	280
1898	1,102	758	344
1899	2,223	1,706	517
1900	2,963	2,323	640
1901	2,586	4,144	442
1902	3,914	3,283	631
1903	3,686	3,310	376
1904	3,766	3,366	400
1905	1,922	1,678	244
1906	1,185	1,043	142
1907	655	529	126
1908	402	317	85
1909	305	219	86
1910	366	300	66
1911	117	82	35
1912	89	65	24
1913	311	225	86
1914	744	471	273
1915	192	97	95
1916	267	161	106
1917	267	173	94
1918	278	176	102
1919	439	322	117
1920	468	354	114
1921	315	236	79
1922	231	170	61
1923	175	122	53
Total	38,432	30,090	8,342

PIERCE PETROLEUM CORP. BUYS CONSOLIDATED PIPE

A controlling interest in the Consolidated Pipe Line Co. of Tulsa, of which Ralph P. Kistler is president, has been purchased by the Pierce Petroleum Corp. of New York. according to an announcement made by Clay Arthur Pierce, president of the latter concern. Mr. Kistler is to remain as the operating executive of the company and has been appointed manager, effective January 1, 1925, of the United States production, pipe line and land department of the Pierce Petroleum Corp., with headquarters at Tulsa, succeeding J. L. Chamberlain, resigned, effective that date, the announcement states.

"Effective January 1, 1925, the offices of the Consolidated Pipe Line Co. and the United States production, pipe line and land department of this corporation will be consolidated in the present offices of the Consolidated Pipe Line Co. in the Petroleum Building, Tulsa," it is stated.

The Consolidated Pipe Line Co.'s main line extends from West Tulsa to a point 7 miles west of Henryetta, Okla., a distance of about 60 miles. It is a 4-inch line and is supplemented by an extensive system of gathering lines.

DRAKE PRESIDENT WEDS

OIL CITY, Pa., Jan. 3.—At a dinner at the Venango Club, George H. Torrey, oil producer, president of the Venango Club and president of the Drake Day Association, announced his marriage to Mrs. Ella Russell Humphrey, daughter of Mrs. Agnes Russell of 401 Central Avenue, by Rev. A. S. Bacon, pastor of the First Presbyterian Church of Ningara Falls, N. Y., at that place on September 9, 1924.

It's worth changing to

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For those wells where excessive sand cuts through the ordinary ball and seat, try a HOUGH "STEELEX." Made of an especially tempered steel, it withstands the action of the sand, giving long and satisfactory service and eliminating the necessity for frequent replacements.

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THE CHARLES N. HOUGH MFG. CO.
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Products that cut down your underground overhead

SEVEN-YEAR SURVEY OF REFINERY INDUSTRY

(Continued from Page 20)

—"fast-growing" and "slow-growing." Their growth since 1918 has been as follows:

	Monthly Demand 1918	Monthly Demand 1924
Fast-growing—		
Gasoline	308,000,000	743,000,000
Fuel oil	603,000,000	1,149,000,000
Slow-growing—		
Kerosene	162,000,000	202,000,000
Lubricating oil	70,000,000	95,000,000

Referring to the sets of tables published with the graph it is interesting to note the steady, year-by-year growth of the gasoline business which for the last three years has been at the rate of 1,000,000,000 gallons a year—and of the fuel oil business that for the last three years has been growing at the rate of 1,500,000,000 gallons a year.

On Tank Car Basis

Reduced to a tank car basis, our gasoline business has developed to the point that the annual increase alone for 1922 and 1923 was, and for 1924 will be equivalent to 125,000 cars—or an average daily increase of 342 cars. And our fuel oil business has developed to the point that the annual increase alone in 1922 and 1923 was, and in 1924 will be, equivalent to 150,000 cars—or an average daily increase of 411 cars.

The characteristically "seasonal" nature of gasoline is clearly shown on the graph—much more so however in the demand than in the supply. In the last four years the supply line has "straightened out" remarkably—all of which indicates that the natural gasoline plants and cracking plants, along with highly efficient storage, are helping to reduce the making of gasoline, in the aggregate, to a regular "manufacturing" basis with a reasonably uniform uptrending curve.

Referring to the graph we find that in 1918 the "range" between the midsummer "hump" and the following midwinter "slump" of the demand line (domestic consumption plus exports) was 186,000,000 gallons. In 1919 this range was 154,000,000 gallons—in 1920 it was 268,000,000 gallons—in 1921 it was 253,000,000 gallons—in 1922 it was 179,000,000 gallons—and in 1923 it was 270,000,000 gallons.

The gasoline business must be equipped with a pretty good "shock absorber" in the shape of storage, finance and level-headed operators, when it can take the "jolt," every year, of a swing of around 250,000,000 gallons between its midsummer and midwinter consumption.

An industrial up-grade road that is as "bumpy" as the gasoline business has been—and probably will long continue to be—must obviously be operated on a different basis from the kerosene and lubricating oil business, as shown on the graph.

Comparing the supply and demand lines for fuel oil with the supply and demand lines for gasoline, we find no outstanding "seasonal" demand. The "swings" are entirely too frequent, and scattered too generally through the year to indicate any outstanding seasonal tendency.

One Steady Swing

On the graph the demand line for gasoline crosses the supply line 13 times in 82 months, or twice each year. Regularly, and without any exceptions—and at about the same time each year—these lines cross and recross with a sequence so dependable that if there were such a thing as an "agreement in restraint of trade" among the refiners, they couldn't possibly have a better background against which to operate their "agreement" than this, the most unvarying "trade swing" in the entire oil industry.

In striking contrast to this "twice-a-year" crossing of the gasoline lines, the kerosene lines cross 35 times in 82 months—the gas and fuel oil lines cross 34 times—and the lubricating oil lines cross 32 times.

The "turn over" of stock is just as essential in the oil business as in any other business—and applying this well-known industrial principle to the refinery's four major products we find that on the basis of stock turnover, the oil business is in better shape than practically any other large industry today.

Taking the first 10 months of 1924 as an illustration, and confining the ratios to the "stocks at refineries," the "exports" and the "domestic demands," as reported monthly, by the United States Bureau of Mines, we find that by dividing the average stock of these four products by the average daily demand (domestic consumption plus exports) we have the following:

Gasoline	58 days supply
Kerosene	46 days supply
Fuel Oil	42 days supply
Lubricating Oil	79 days supply

Stock Turnover

In other words, in the 305 days from January 1 to October 31 we "turned our stock" of gasoline a little more than five times (305 divided by 58). Or, expressed another way, we did a total business of 7,428,000,000 gallons, during these 305 days, with an average "stock" of 1,420,000,000 gallons—therefore we "turned our stock" five times in this 10-month period. We turned our stock of kerosene almost 7 times—our stock of fuel oil slightly more than 7 times—our stock of lubricating oil almost 4 times.

Gasoline, kerosene, fuel oil and lubricating oil are used by practically every industry and every business in the world—and it would be interesting to ask the people in other lines of business, both large and small, how often they "turn their stock" in a year—and then reflect on how often the stocks of gasoline, kerosene, fuel oil and lubricating oil are being turned.

Approaching the oil industry from this angle, one marvels at the viewpoint of well-meaning but uninformed people who seek to "regulate" a business that for the last 65 years has had no other regulator than the "Law of Supply and Demand."

Keeping in mind our several hundred refineries, among the "units" of which there is most obviously no "agreement in restraint of trade," but between which there always has been and there always will be the keenest of competition, the marvel of it all is that the aggregate result of all of their efforts has been so well balanced that our annual supply of gasoline, kerosene, fuel oil and lubricating oil has "traveled ahead" of the demand by the narrow margin of one or two per cent—and occasionaly fallen behind.

With 65 years of known results from the free and uncontrolled operation of the Law of Supply and Demand it is very probable that no one outside of the industry could enact a better "law."

VAPOR PRESSURE IN GASOLINE MOVEMENT

(Continued from Page 90)

this apparatus shall be operated, also to make recommendations as to what the upper limit of vapor tension, as determined by the method chosen, shall be for shipments in naked and insulated tank cars.

It is further understood that this commission is to procure data from the various crude oil and natural gas fields of the United States when gasoline is produced, and make comparative tests, at different seasons of the year, between all methods of determining vapor tension that may be under consideration, all tests to be conducted with standardized apparatus and observing in all tests the same method of procedure, elimination of error, etc. This commission is to report their final conclusions, in the form of a recommendation, to the American Petroleum Institute who is then to make a recommendation to the Bureau of Explosives.

Four Regional Chairmen

At a further meeting held in September, 1924, in order that the above commission might function along the same lines in all parts of the country the territory in which natural gasoline is manufactured was divided into four regions, namely, Eastern, Central and Rocky Mountain, Gulf Coast and Western, and regional chairmen were appointed in each district who would be responsible for making all tests in their particular re-

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Experience has shown that NO-CO-ROS will last several times as long as any ordinary ball and seat. In many wells they have lasted 10 to 12 months where other valves had worn out in 2 or 3 weeks. This means a yearly saving of many hundreds of dollars in increased production and decreased repair bills.

With NO-CO-RO Balls and Seats installed in your wells you can simply forget all about the valves for months at a time confident that they will keep the oil flowing in spite of the presence of sand, acid or water.

Backed by 17 Years of Experience and Square Dealing

NO-CO-ROS are made from a special alloy steel, scientifically tested by three different processes before they leave the factory, and are absolutely guaranteed against rust, corrosion or imperfect fits.

And when Norris Brothers guarantee a product by placing their trade mark upon it, you can know that it MUST be good. Norris Brothers have been manufacturing oil well pumping equipment for 17 years. Their organization and their products are well and favorably known wherever oil is produced or handled. Their reputation for square dealing is unquestioned and their trade mark is accepted by the purchasers of oil well equipment everywhere as the mark of service and satisfaction.

Try a set of NO-CO-RO Balls and Seats in your wells and if they do not come up to your expectations in every way the purchase price will be refunded to you. If you cannot get them at your regular supply house, write direct.

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141

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gion. It was further agreed that all tests on any particular gasoline should be made in triplicate, with both the present and the Anderson type of apparatus. Further, various specific instructions were developed as regards the method of procedure in using both forms of apparatus to make sure that all parties would follow the same method in conducting tests, and the necessary number of standardized Anderson and Bureau of Explosives instruments were especially made and distributed to each regional chairman.

The results of these tests to date with all parties using the standardized apparatus and the same method of procedure are hardly sufficient to draw any general conclusions. It is interesting to note, however, that the Mid-Continent region report that the Anderson apparatus registers consistently higher results than the Bureau method, these figures ranging from 1 to 11 pounds higher for gasolines from 81 degrees to 101½ degrees, A. P. I. Results of the eastern region tests to date also indicate the Anderson apparatus to show higher results than the bureau apparatus. Results from the Gulf Coast and western regions will not be available until the end of January for discussion. It is also worthy of note that these tests, carefully carried out by experts, indicate that the bureau apparatus when carefully used and properly handled can be made to check upon itself very well.

Further Suggestions

The work to date has also developed a few further suggestions, of which might be particularly mentioned, which consists of using a ¾-inch pipe, 6 inches to 8 inches long, chained to the vapor tension bomb for holding the 10 per cent, poured off, this being used to replace the ordinary glass graduate originally specified for this work, the arrangement permitting the whole apparatus to be kept at the same temperature and thus preventing vaporization, due to heating. The work has also demonstrated conclusively the advantage of using a bomb of standardized construction and in accordance with a specific procedure, and further shown that different results will be secured with different bombs if the construction of the bomb itself is varied. For example, an iron and brass bomb will give different results. A bomb made of heavy pipe with heavy cap ends transmits heat more slowly to its contents than does a light brass one with brazed-in or soldered-in metal ends; hence, at 70 degrees the heavy iron bomb will give a lower reading because its contents have not reached a temperature of 70 degrees, while a brass bomb will give a higher one. This all points to the advantage regardless of which type of bomb is used, of the standardization of dimensions and construction of a bomb so that the exact details are not left to the individual user in the field. It should be pointed out that probably the most essential factor in connection with this whole work is the character of the gasoline under test. Gravity apparatus means little, and there is no relation which has been found between the gravity and the vapor tension, the method of manufacture of the product being the essential factor. It is also believed in general that the tendency toward better fractionation will result in the type of product being shipped of a very much less wild nature than has been the case in the past, and hence the extreme wildness of the product which has been the apparent fear of the Bureau of Explosives will be largely through process of manufacture, eliminated. Also, while the investigation recorded herein is interesting and shows a real effort on the part of the industry to devise better methods and better apparatus, it should be remarked that the writer knows of no accident which has occurred either in tank cars or storage tanks which is directly traceable to either the method used or the apparatus used in determining the vapor tension of the product.

High Vapor Tension

In July, 1924, immediately after the St. Paul accident, an investigator for the Interstate Commerce Commission reported that the vapor tension of the car

(Continued on Page 122)

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SMALL DECREASE SHOWN IN REFINERY RUNS

(Continued from Page 23)

Southern Refining Co. will be shut down the first 15 days of the month. Frank P. Walsh formerly connected with the Standard and Gulf Refining companies now has charge of the operations of this company. He is making improvements at the plant which will have a capacity of 3,000 bbls. when completed.

REFINING OPERATIONS IN ARKANSAS
(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs Jan. 1	Runs Dec. 1
Cross Refining Co., Smackover	2,000	1,700	2,000
Farmers Oil & Refining Co., Texarkana	750	Shut down	Shut down
Four States Refining Co., Texarkana	750	Shut down	Shut down
Grison Refining Co., Eldorado	750	Shut down	Shut down
Home Refining Co., Camden	500	220	100
Home Oil & Refining Co., Hot Springs	3,500	175	100
Houston Oil Co., Camden	5,000	Building	Building
Jones & Co., R. C., El Dorado	1,000	Shut down	Shut down
Kettle Creek Refining Co., Pearson	4,000	2,500	3,000
Lion Oil & Refining Co., El Dorado	10,000	6,000	5,400
Ouachita Valley Refining Co., El Dorado	2,000	1,500	Shut down
Pine Bluff Refining Co., Pine Bluff	2,000	800	500
Root Refineries, El Dorado	3,000	1,750	2,100
Union Pipe Line & Refining Co., El Dorado	4,000	Rerun	700
Shippers Petroleum Co., El Dorado	700	Shut down	Shut down
Total	36,950	14,545	13,900

REFINING OPERATIONS IN NORTH LOUISIANA
(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs Jan. 1	Runs Dec. 1
Caddo Central Oil & Refining Co., Shreveport	3,500	3,500	3,500
Caddo Central Oil & Refining Co., Shreveport	7,000	3,500	5,000
Great Southern Refining Co., Ardis	2,000	Shut down	600
Louisiana Oil Refining Corp.—			
Shreveport	10,000	9,000	
Bossier	3,000	600	10,000
Red River Refining Co., Crichton	1,800	Shut down	Shut down
Shreveport Producing & Refining Co., Shreveport	5,000	4,000	4,000
*The Texas Co., Ardis	7,000	6,000	6,000
Total	37,300	26,600	29,100

*Topping.

REFINING OPERATIONS IN OKLAHOMA
(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs Jan. 1	Runs Dec. 1
Allied Refining Co., Okmulgee	1,800	850	1,000
Anderson-Prichard, Cyril	1,200	900	900
Barnsdall Refining Co., Barnsdall	5,000	4,500	4,600
Beh Oil & Gas Co., Grandfield	2,000	Shut down	Shut down
Bolene Refining Co., Enid	5,000	4,000	3,900
Cameron Refining Co., Ardmore	3,000	2,800	3,100
Canfield Refining Co., Yale	500	115	75
Champlin Refining Co., Enid	16,000	11,300	11,000
Chestnut & Smith Corp., Sand Springs	5,000	Shut down	Shut down
Coleman-Nelson Corp., West Tulsa	2,000	Shut down	100
Cosden & Co., West Tulsa	35,000	28,000	32,000
Cushing Refining & Gasoline Co., Cushing	2,500	1,500	1,800
Cushing Refining & Gasoline Co., Blackwell	1,500	1,000	1,000
Daisy Belle Petroleum Co., Wilson	2,000	Shut down	125
Empire Refineries Inc., Cushing	7,000	5,000	5,250
Empire Refineries, Inc., Okmulgee	3,000	3,000	2,500
Empire Refineries, Inc., Ponca City	6,500	6,000	6,000
Garber Refining Co., (Omar)	3,000	1,300	1,300
Globe Oil & Refining Co., Blackwell	5,000	4,500	4,000
Hewitt Refining Co., Hewitt	1,800	700	800
Illiois Oil Co., Cushing	3,000	3,000	1,800
Imperial Refining Co., Ardmore	6,000	4,400	4,100
Johnson Oil Refining Co., Cleveland	4,000	3,300	3,200
Lawton Refining Co., Lawton	1,000	Shut down	125
Lorraine Refining Co., Bristow	4,000	2,000	2,500
Marland Refining Co., Ponca City	15,000	12,000	12,700
Nyanza Refining Co., Wilson	3,500	700	750
Oil State Refining Co., Enid	2,000	350	500
Oil State Refining Co., Allen	600	Shut down	Shut down
Okla.-Tex. Refining Co. (Sagamore), Grandfield	2,000	2,000	2,200
Phillips Co., (Waite), Okmulgee	6,000	5,000	5,200
Peppers Gasoline Co., Covington	1,000	400	500
Pierce Oil Corp., Sand Springs	10,000	5,000	5,000
Producers & Refiners Corp., West Tulsa	7,000	4,000	5,200
Producers & Refiners Corp., Blackwell	8,000	1,500	1,800
Pure Oil Co., Ardmore	6,500	2,000	2,000
Pure Oil Co., Cushing	5,000	4,000	4,000
Pure Oil Co., Muskogee (O. P. & R. Co.)	2,500	2,000	2,000
Riley Petroleum Co., Bristow	800	400	500
Rock Island Refining & Pipe Line Co., Duncan	2,000	1,500	1,700
Roland Oil Co., Bristow	1,500	1,100	1,000
Sapulpa Refining Co., Sapulpa	7,000	Shut down	Shut down
Shaffer Oil & Refining Co., Cushing	8,000	6,500	6,500
Superior Oil Corp., Grandfield	3,000	Shut down	Shut down
Sun Co., Yale	3,000	2,000	2,000
Sinclair Refining Co., Cushing	6,000	3,000	2,000
Sinclair Refining Co., Muskogee	1,000	500	700
The Texas Co., West Tulsa	10,000	9,500	9,500
Texas Pacific Coal & Oil Co., Wynnewood	2,500	1,100	1,250
Tidal Refining Co., Drumright	5,000	4,600	2,000
Transcontinental Oil Co., Boynton	2,500	1,500	1,500
Transcontinental Oil Co., Bristow	5,000	5,000	4,500
Tonkawa Petroleum Co., Tonkawa	2,500	800	1,000
Turley Refining Co. (Formerly Home Petroleum Co.) Oklahoma City	2,500	Shut down	Shut down
Whaleback Production Co., Oklahoma City	1,500	Shut down	125
Western Oil Corp., Beckett	1,500	1,200	1,000
Yale Oil Corp., Yale	1,500	1,000	1,200
Yale Asphalt Co., Yale	1,000	300	300
Total	160,200	167,115	173,000

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS
(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs Jan. 1	Runs Dec. 1
Amarillo Refining Co., Amarillo	3,500	1,000	1,400
American Refining Co., Wichita Falls	7,000	4,800	5,000
Boney, H. E., Burkburnett	500	Shut down	Shut down
Boardman Oil Co., Wichita Falls	750	175	250
Buffalo Refining Co., Sherman	500	200	250
Clayton Oil & Refining Co., Dallas	4,500	4,300	4,500
Cross (H. H.) Refining Co., Corsicana	2,500	950	800
Crystal Petroleum Co., Burkburnett	1,000	550	600
De Leon Refining & Pipe Line Co., De Leon	1,500	250	185
Griswold Oil Co., Electra	3,000	2,450	2,450
Gulf Refining Co., Fort Worth	15,000	5,200	6,000
Humble Oil & Refining Co., Burkburnett	2,000	1,900	2,000
Humble Oil & Refining Co., Hearne	10,000	7,600	7,500
Interstate Gasoline Products Co., Iowa Park	2,000	Shut down	Shut down
Iowa Park Producing & Refining Co., Iowa Park	2,500	Shut down	1,700
Lone Star Refining Co., Wichita Falls	4,000	Shut down	Shut down
Miller Petroleum Co., Wichita Falls	3,000	2,000	2,000
Magnolia Petroleum Co., Fort Worth	12,000	6,600	6,000
Magnolia Petroleum Co., Corsicana	10,000	2,100	2,100
Megargel Refining Co., Megargel	2,000	1,100	1,300
Mexia Oil & Refining Co., Mexia	600	100	100
National Refining Co., of Texas, Greenville	2,000	300	300
Noble Oil & Gas Co., Burkburnett	5,000	2,000	2,000
Olney Oil & Refining Co., Olney	1,000	450	250
Oriental Refining Co., Dallas	6,000	200	200
*Oriental Refining Co. (Trinity), Dallas	5,000	3,000	2,500
Orient Petroleum Co., Wichita Falls	2,000	1,200	1,500
Paris Refining Co., Paris	500	200	200
Panhandle Refining Co., Wichita Falls	4,500	4,100	4,100
Prairie Refining Co., Grand Prairie	500	Shut down	Shut down
The Petroleum Corp., Electra	2,000	1,200	1,400
Primrose Refining Co., Wichita Falls	1,500	1,250	1,200
Producers Refining Co., Gainesville	5,000	4,000	4,000
Star Refining Co., Fort Worth	1,500	1,000	1,000
State Refining Co., Dallas	1,000	Shut down	Shut down
Sunshine State Oil & Refining Co., Wichita Falls	2,500	1,200	700
Tidal Western Refining Co., Burkburnett	3,000	1,900	2,000
The Texas Co., Dallas	15,000	8,700	8,566
Texhoma Oil & Refining Co., Wichita Falls	7,000	4,800	5,000
Tiger Refining Co., Breckenridge	1,500	100	100
Transcontinental Oil Co., Fort Worth	5,000	2,500	2,900
Travis Refining Co., Burkburnett	1,000	300	200
Waggoner Refining Co., Electra	3,400	2,800	3,000
White Eagle Oil & Refining Co., Fort Worth	5,000	2,600	2,500
Wichita Refining Co., Wichita Falls	2,000	1,200	700
Total	165,750	86,275	88,335

*Operated by Magnolia Petroleum Co.

REFINING OPERATIONS IN KANSAS
(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs Jan. 1	Runs Dec. 1
Commonwealth Oil & Refining Co., Moran	1,800	150	200
Derby Oil & Refining Co., Wichita	6,000	3,800	3,675
El Dorado Refining Co., El Dorado	3,500	2,500	2,300
Frontier Refining Co., Hutchinson	2,500	200	200
Grant Oil Co., Augusta	500	200	Rerun
Golden Rule Refining Co., Wichita	1,000	1,000	500
Industrial Refining Co., El Dorado	1,500	Shut down	Shut down
Kanotex Refining Co., Arkansas City	6,000	5,800	5,400
Kansas Oil Refining Co., Coffeyville	2,000	300	300
Kansas City Refining Co., Kansas City	4,000	3,600	3,600
Moore Refining Co., Arkansas City	6,000	4,200	4,800
Miller Petroleum Co., Humboldt	2,000	1,000	1,000
National Refining Co., Coffeyville	6,000	6,000	6,000
Peerless Oil Refining Co., Chanute	3,000	2,500	1,800
Red Bird Refining Co., Fredonia	200	50	50
Richardson Refining Co., El Dorado	1,500	Shut down	Shut down
Roxana Petroleum Corp., Arkansas City	15,000	10,000	10,000
Sinclair Refining Co., Coffeyville	6,500	5,200	6,300
Sinclair Refining Co., Argentine	8,000	5,500	5,800
Skelly Oil Co., El Dorado	14,000	6,500	7,500
Standard Oil Co. of Kansas, Neodesha	12,000	11,500	11,000
Vickers Petroleum Co., Potwin	3,500	2,000	2,200
Waite Phillips Co., Wichita	5,000	Shut down	Shut down
White Eagle Oil & Refining Co., Augusta	6,500	5,000	5,000
Southern Missouri Grop—			
Interstate Refineries, Inc., Centropolis	1,500	Shut down	Shut down
Marshall & Co., Sheffield	2,500	Shut down	Shut down
Wilhoit Refining Co., Joplin	1,500	1,000	1,100
Total	135,300	78,000	78,925

COASTAL QUOTATIONS SHOW UPWARD TREND

FORT WORTH, Tex., Jan. 5.—The price trend in fuels and gasoline during the past week in North Texas was upward. The strong demand for fuel oil, gas oil and distillates continues with little material available for immediate shipment. Several refiners are sold up for the month while others are holding for still higher prices. Fuel oil prices ranged up from $1.25 and distillate prices ranged from 3¾ to 4¼ cents depending on grade.

The situation in regard to gasoline resembles that which existed the latter part of November and the first week in December. At that time a combination export buying and large domestic purchases for Texas delivery quickly absorbed all the supplies available, bringing a sensational advance in prices. The buying the past week has not been so heavy as it was at that time but it has been sufficient to hold the 58-60 U. S. Motor price firm at 8 cents with advances in the higher gravities.

The Gulf Refining Co. is reported to have purchased 400 cars of 58-60 for delivery at its Texas stations during January. The Humble Oil & Refining and the Gulf Refining companies have also purchased smaller quantities for Texas delivery. The Atlantic Refining Co. is still buying for export. The company last week purchased all the 64-66, 375 available at 10 cents and refiners are now asking 10¼ to 10½ cents. There is no more 60-62, 400 available at 8¾ cents, the market now being 9 to 9¼ cents.

Natural gasolines have not changed during the week except that the A grades are difficult to find under 9 cents. Production of these grades is less in the Breckenridge area due to the cold weather. There has been a better demand for kerosenes and prices are slightly higher than they were a week ago.

NO RULING ON OSAGE INCOME

WASHINGTON, D. C., Jan. 5.—The Supreme Court refused today to decide whether the regular quarterly payments of $1,000 income on tribal funds can be withheld from Osage Indians who have not been declared incompetent.

TANK BUILDER DIES

CASPER, Wyo., Jan. 3.—John W. Wilson, a well known tank builder and contractor of Wyoming, died at the Casper Hospital December 31, his death having been caused by hemorrhage of the brain. Mr. Wilson came to Wyoming from Texas in 1919. He is survived by his widow and two children and two brothers in Texas.

TO ENFORCE RULE 37 PENDING FINAL TRIAL

AUSTIN, Tex., Jan. 5.—The oil and gas division of the State Railroad Commission will continue to enforce Rule 37 so far as possible, despite trial court injunctions against its enforcement, pending a decision on its validity by the Supreme Court, Supervisor H. E. Bell announced Monday. He served notice if the law is upheld, penalties up to $5,000 per day for violations will be applicable.

Judge Calhoun of Travis County district court and Judge Blackmon of Limestone County, have held against the validity of Rule 37 which gives the State power to prohibit drilling wells closer than 150 feet of property lines without special permits.

The State's appeal from Judge Calhoun's decision is now in Third Civil Appeals Court. A decision is expected early this year.

"The Railroad Commission feels, as it has always felt that Rule 37 is not only a valid exercise of the authority given by the Legislature in enacting the oil and gas conservation law, but is necessary if the law is to accomplish the full purpose of its enactment," Judge Bell declared.

"The commission feels also that it has served to protect the public interest and at the same time has not been a burden upon those engaged in the oil producing industry. As proof that its worth has been fully appreciated it may be pointed out that its validity has never been contested in the courts except in two instances, and they were practically the same. The commission feels it to be its duty to enforce the rule so far as lies within its power until such time as the higher courts might say it was invalid, leaving to the trial courts the unquestioned right to pass upon the question as their conception of the law dictates.

"If, however, the higher courts should hold the rule valid, then those violating it would be liable to the statutory penalty of not exceeding $5,000 for each day of such violation. Operators are expected to comply with the rule pending final judgment in the case.

PRAIRIE SHIPMENTS INCREASED

The Prairie Pipe Line Co.'s crude oil shipments for December were 3,857,783.66 bbls., or an average of 124,444 bbls. a day. The same company in November delivered to refiners 3,502,938 bbls., or an average of 116,764 bbls. a day. The December shipments of the company exceeded those of November by 7,680 bbls. a day, equivalent to 238,080 bbls. increase in a 31-day month. The company's October shipments were 116,696 bbls. a day or 7,748 bbls. a day less than in December.

Late News From the Fields

THE WORTHAM FIELD

MEXIA, Tex., Jan. 6.—The Wortham Field, in Limestone and Freestone counties, was producing at the rate of 106,000 bbls. a day early Monday. A report of pipe line runs made on that day showed the following results:

Atlantic Oil Producing Co. & Penn's No. 1 McCorkle, 6,410 bbls.

Boyd Oil Co.'s No. 1 Boyd, 750 bbls.

Boyd Oil Co.'s Nos. 1 , 2, 3, 4, 5 and 6 Simmons, 14,972 bbls.

Boyd Oil Co.'s No. 2 Ferguson, 480 bbls. in five hours.

Boyd Oil Co.'s No. 2 Manning, 200 bbls. in six hours.

J. K. Hughes No. 1 Simmons, 4,500 bbls.

Humble Oil & Refining Co.'s No. 1-A Crouch, 6,599 bbls.

Humble Oil & Refining Co.'s No. 1-A Lindley, 2,321 bbls. in 14 hours.

Humble Oil & Refining Co.'s No. 2 Poindexter, 4,982 bbls. in 13 hours.

Gulf Production Co.'s No. 1 Ferguson, 584 bbls. in 16 hours.

Humble Oil & Refining Co.'s Nos. 1 and 2 Ella Dood, 3,313 bbls.

Kirby Petroleum Co.'s No. 1 Bounds, 3,080 bbls.

Moss & Keeling's No. 1 Simmons, 4,670 bbls.

Oxford Oil Co.'s No. 1 Morrow, 2,275 bbls.

Kirby Petroleum Co.'s No. 1 Chancellor, 6,653 bbls.

Pure Oil Co.'s No. 1 and 2 Bounds, 9,267 bbls.

Rio Bravo Oil Co.'s Nos. 1, 2 and 4, H. & T. C. right of way, 12,515 bbls.

Simms Oil Co.'s No. 1 Calome, 6,472 bbls.

Simms Oil Co. & Marland Oil Co.'s No 1 Edwards, 1,974 bbls.

E. L. Smith and others' No. 1 Edwards, 1,950 bbls., 40 per cent b.s.

Stroube & Stroube's No. 1 Lindley, 3,015 bbls.

The above shows a total of 30 wells, with an estimated production of 105,753 bbls. a day if the wells on which a part of a day's gauge is given in the above production report maintain their hourly average for a full 24-hour period..

On Sunday a report from 25 completions showed a production of 86,350 bbls. a day. Two dry holes had been reported in the field up to Monday morning. The Mutual Oil Co.'s No. 1 Mrs. J. J. Manning drilled into salt water and is a failure at a total depth of 3,028 feet. The other dry hole is the Humble Oil & Refining Co.'s No. 2-A Crouch, already reported a failure at 3,028 feet. The Mutual Oil Co.'s failure is about 1,200 feet due east of a line extending between the Boyd Oil Co.'s No. 1 Boyd and No. 1 Simmons. It offsets the east side of the H. & T. C. Railroad right of way. The Rio Bravo Oil Co. has three good wells on the west side of the right of way but farther to the north.

Townlot Gusher

One of the biggest wells yet completed in the field is on a town lot on Brazos Avenue east of the railroad in Wortham. It was drilled by the Humble Oil & Refining Co. on the R. Poindexter property, the lease consisting of three 50-foot lots and a back-lot addition. The well started at the rate of 9,200 bbls. a day from sand at 2,934 to 3,010 feet. This well is in line between the Penn & Atlantic Oil Producing Co.'s big well on the McCorkle farm and the Boyd Oil Co.'s Simmons farm wells, and it looks as if the richest part of the Wortham Field will lie in the small area mentioned. The wells thus far drilled in on the south end of the producing streak in Limestone County have been comparatively light producers, while the same may be said of the Humble Oil & Refining Co.'s two wells on the Ella Dodd acreage, in Freestone County, which are the most northerly, or rather northeasterly of the wells in the field. The Humble company's No. 2 Dodd started at 1,800 bbls. from sand at 2,930-90 feet, while its No. 1 Dodd was a 1,200-bbl. well, already reported.

Moss & Keeling's No. 1 Simmons, on a small piece of acreage in the heart of the field and just south of the Kirby Petroleum Co.'s No. 3 Bounds, started off at 4,670 bbls. from sand at 2,936-80 feet.

The Gulf Production Co.'s No. 1 Ferguson, first reported as a probable dry hole, and later as looking good for 1,000 bbls. was swabbing. It is located about 2,000 feet northeast of the discovery well in the field, in Limestone County.

The Humble Oil & Refining Co.'s No. 1-A Lindley, in Freestone County, started at 6,500 bbls. from sand at 2,910-80 feet.

The Oxford Oil Co. on a 1-acre tract in the northeast corner of the Mrs. J. K. Hughes' lease on the Crouch farm, is a 2,500-bbl. initial producer from sand at 2,979-99 feet.

The Rio Bravo Oil Co.'s Nos. 1, 2 and 4 H. & T. C. right of way were reported on Sunday as producing 13,415 bbls.

The Boyd Oil Co.'s No. 2 Manning, in Limestone County started at 200 bbls. the first six hours from sand at 3,004-11 feet but was to have been drilled deeper. The same company's No. 2 Ferguson, got sand at 2,978-3,017 feet, and gauged 480 bbls. in five hours.

Late Monday the Simms Oil Co.'s No. 2 Calome was reported in at 250 bbls. an hour. It got sand at 2,968-3,015 feet. The same company's No. 2 Simmons found sand at 2,948-70 feet and flowed 1,355 bbls. the first six hours.

The Humble Oil & Refining Co.'s No. 1 Ferguson started at 245 bbls. an hour from sand at 2,957-75 feet.

The J. K. Hughes' No. 1 E. Crouch was a 5,000-bbl. initial producer from sand at 2,942-93 feet.

The Gulf Production Co.'s No. 1 T. L. Simmons had sand at 2,963-89 feet but bailed dry. It will be drilled deeper.

The Atlantic Oil Producers Co.'s No. 1 Edwards bailed dry at 3,013-18 feet and it will be drilled deeper.

The Boyd Oil Co. is drilling No. 2 Simmons deeper. It stopped flowing last week. The same company was setting liner at 3,015 feet in No. 2 Manning.

J. K. Hughes was drilling at 2,925 feet in No. 2 Crouch. It is believed that all of this lease will be productive.

E. L. Smith's No. 1 Edwards is now flowing open and making 4,100 bbls. a day, 45 per cent b.s.

The Tri Wy Oil Co.'s No. 1 McCorkle is setting casing at 3,030 feet.

Production on Monday was 110,750 bbls. from 31 wells. There are at this writing 35 oil producing wells in the field.

OKLAHOMA

The Alcorn Oil & Gas Co.'s No. 1 Fitzgerald, C SE SW NE, Section 1-26-2w, Kay County, found sand at 2,680 feet and was making 2,000,000 feet of gas and spraying oil. No. 1 Hockstater, SE cor. SW, Section 1-26-2w, was making 23,000,000 feet of gas from sand at 2,519-26 feet.

The Roxana Petroleum Corp.'s No. 1 McAlester, SW cor. SE SW, Section 1-8-8, in the Roxana or Buckner Pool has stopped flowing after having held up to 300 bbls. until Tuesday. It is being put on the swab.

GULF COAST

HOUSTON, Tex., Jan. 5.—A new producing area seems to have been opened in Liberty County, 3 miles from the town of Liberty and 30 miles east of here by the completion by Winfrey and others of a well making about 600 bbls. daily of 22 gravity oil from sand struck between 3,400 and 3,500 feet. Tests have been made around this section for about 25 years without any previous success. The well was drilled on a 5-acre tract.

The Mid-Kansas Oil & Gas Co. (subsidiary Ohio Oil) is ready to start its first deep test in south Texas on the Edna Krueger tract in Guadalupe County, with the Buckeye Oil (subsidiary of Union Oil of California) which has just spudded in a test on the north end of the Swearingen tract in Bexar County. This makes total of 14 major interests actively drilling in the San Antonio territory.

Both Mid-Kansas and Buckeye tests are to go to the Edwards Lime, producing formation in the Luling Field.

The Roxana Petroleum Corp. has a block of acreage nearly completed southwest of Whittsett in Live Oak County on which it will drill.

OFFICE REESTABLISHED

A branch office at Tulsa has been reestablished by the Sinclair Refining Co. for the distribution of Sinclair oils, lubricants and greases. C. C. Simmons, who has been associated with the Frick-Reid Supply Co. for the past 14 years, is in charge of the Tulsa office, and will also supervise the office at Muskogee. The division office at Kansas City, Mo., is managed by J. E. Dyer. According to the announcement made by the company, it does not contemplate reentering the gasoline distribution field in Tulsa. For some time, all Sinclair products were handled in the Tulsa district by jobbers.

LEASE AUCTION DELAYED

Commissioners of the Oklahoma State land office have postponed the sale of oil and gas leases in Comanche and Pawnee counties to January 15. The original date set for the sale was December 23. Leases to be offered are the northeast and southwest quarters of Section 20-2n-10w, and the northeast and southwest quarters of Section 16-20n-8e.

NEXT CONGRESS AND OIL

A canvass of members of the House and Senate in the next Congress, regarding regulation of the oil industry, reveals that 33 per cent of the 41 per cent replying favor governmental regulation by law, 59 per cent oppose regulation or interference and 7 per cent are noncommital.

JESSE W. VANIMAN DIES

Jesse W. Vaniman, Wichita, Kans., oil man, died suddenly recently. He was 53 years old and had been connected with several oil companies, and was president of the Southwest Petroleum & Refining Co., of Wichita.

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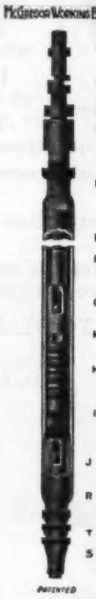

Over fifty thousand now in use from Pennsylvania to Argentine and from Oklahoma to India wherever oil is produced.

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THEY knock the girl who is beautiful but dumb, but she isn't the girl I am sorry for.

The real tragedy of life is the girl who is homely but dumb.

If a girl hasn't any figure, she ought at least to be able to add them up.

The Nye Die isn't as highly polished as a saxaphone but it lives a nobler life.

And it certainly makes sweeter music for a plumber or steamfitter.

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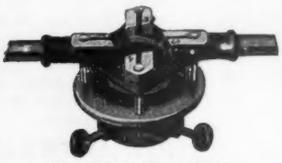

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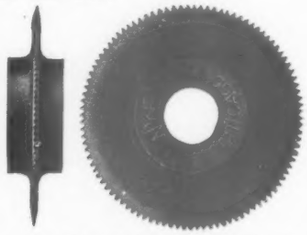

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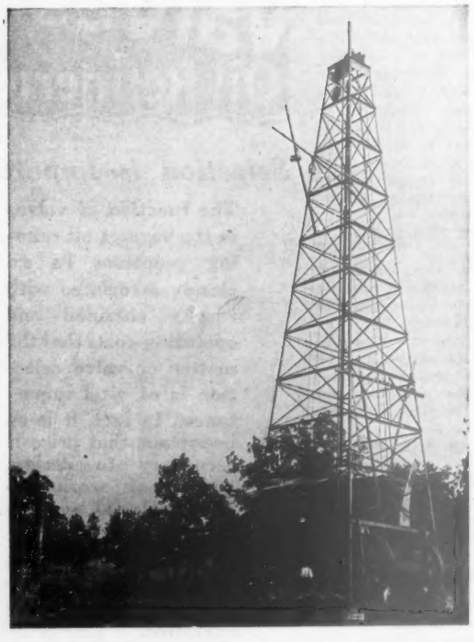

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VAPOR PRESSURE IN GASOLINE MOVEMENT

(Continued from Page 119)

at St. Paul on May 19, 1924, three days after the fire, was found to be 15½ pounds regardless of the intense heat to which the car had been subjected. This would seem to indicate that if the 15½ pounds is the correct figure that the car was evidently shipped at a considerably higher vapor tension than 15½ pounds, and that the shippers had violated existing regulations, due either to carelessness in making the test, or lack of proper equipment. It would seem that had the test on this car been properly conducted and existing regulations kept in mind it would have been almost impossible to ship a car that, after going through a fire, would show a vapor tension of 15½ pounds for the liquid in that car.

The petroleum industry, on the whole, is continually striving to devise new, better, cheaper and safer methods of handling, shipping and storing its products. It is constantly experimenting with and studying new and improved methods for and mechanics of shipment. It has been with a sincere and earnest desire to cooperate in every way with the Interstate Commerce Commission and its advisory agencies, in the practical solution of transportation problems, in which the petroleum industry and the commission have a common concern, that the work briefly outlined herein has been carried on. It is not to be expected that these problems can and will be answered hastily, as there are many variable factors and difficult conditions entering into same. This report would not be complete if special mention were not made of the many companies and several associations that have so heartily participated in the practical working out of these problems.

OIL TESTS FOR NORTH MEXICO

FORT WORTH, Tex., Jan. 3.—American oil development interests in the lower Rio Grande border region of Texas, in Mirando and the Rendado Fields, look upon the recent action of the Mexican Government in issuing a decree opening for exploration and exploitation a big area of country in the State of Tamaulipas, opposite and to the south of the Roma district, as of much significance. The land when the new tests for oil are to be made is under lease to the big companies. Practically all of the land on the Texas side of the Rio Grande border, extending from Roma north for 75 miles and having a width of 50 miles is already under lease. To the north of Roma 18 miles is a shallow oil field where a deep test is now being drilled.

THE ANNUAL REVIEW

The Annual Review will be published on January 29. It will contain a complete and accurate survey of the activities during 1924—a vast wealth of expert information presented in such form that detailed facts, figures and conditions will be easily available to the reader.

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FAIL TO FIND NEW FIELDS

Indo-Burmah Oilfields, Ltd., reports that an exhaustive two-years' survey of the extensive Yenanma area having failed to disclose additional discoveries of oil development promise, it is proposed to surrender that particular territory, with the exception of the present producing area plus a small extension. The company's properties total about 19 square miles, compared with 165 previously held. Production for the year amounted to 53,977 bbls., compared with 56,182 bbls. previously.

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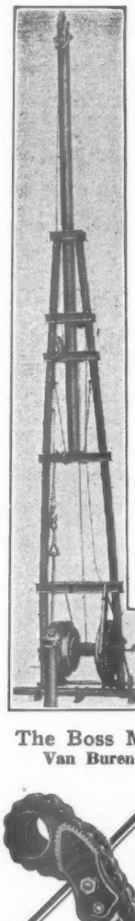

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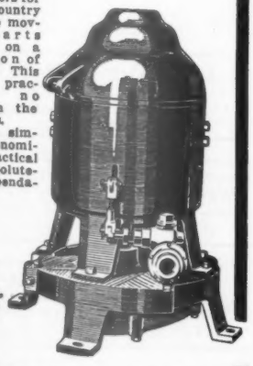

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FAMOUS OIL TOWN BANK DISCONTINUES BUSINESS

CHATHAM, Ont., Jan. 3.—Announcement is made that the old banking house of Vaughn & Fairbank at Petrolia, Ont., widely known in early oil field days as "the little red bank on the corner" will discontinue business at the end of December, after 55 years of continuous service. Decision to this effect was recently reached by the executors of the J. H. Fairbank estate, and depositors were accordingly notified to close out their accounts.

The Vaughn & Fairbank institution, probably the oldest private bank in Canada, dates back to the earlier oil field days when the industry was still in its formative stages. In the spring of 1869 Leonard B. Vaughn and John H. Fairbank, who both had had experience in oil production in the early days of the Oil Springs Field, entered the banking business at Petrolia. Petrolia had continued to produce crude during a period of depression, but the oil industry was at a low ebb. The sulphur odor of the Petrolia crude prevented its ready sale in foreign markets and large stocks of crude had accumulated.

The building for the new bank, the first bank in Petrolia, was moved to the oil metropolis from Oil Springs. At that time most of the oil refining was carried on at London, Ontario. The banking partners had a style that suited the time and place. They knew the active operators. They required no mercantile references as to anyone's standing. Decisions in giving credit were generally determined by their knowledge of the borrower's character and record.

One of Mr. Vaughn's ancestors had been a doctor, and Mr. Vaughn had inherited a tendency to treat all human illness and infirmities. He therefore practiced the healing art on homeopathic lines, amateur of course, and would discount a note on current terms and at the same time prescribe gratis for any of his customers, whether the trouble called for the fifth potency of chamomilla, the thirtieth of belladonna, the two-hundredth of arsenic, or any other drug of any potency.

His partner, John H. Fairbank—a brother of Charles W. Fairbank, later vice president of the United States—was a man of strong and dominating character, and his activities in the oil metropolis were widespread. Their credit-giving methods were rather primitive. Thus on one occasion a sale of oil property had been put through, a large part of the consideration being in notes. Fairbank did not want to take these notes and instructed Vaughn, who was in the bank all day, to, refuse them. Shortly after, looking over the accounts, he found all the notes had been discounted. He challenged Vaughn:

"You have discounted that paper I told you not to take."

"Yes," said Vaughn, "but I did not do it all at once."

"But you should not have done it at all."

"Oh, well," returned Vaughn, "I charged them a little extra rate."

Fairbank was one day asked for a loan. "Let me see your slate," he told the customer. The applicant furnished a verbal statement of assets and liabilities. After summing up, Fairbank bluntly told the man he was worth less than nothing.

The man was bewildered. He could not understand.

"Look here, mate," he protested, "you haven't allowed nothing for luck."

Oddly enough, luck in that case meant everything. Shortly afterward some land in which the man was interested proved to be good oil land.

Petrolia grew and expanded, and the bank with it. Production increased, refineries increased, and some years of prosperity followed. The "little red bank" was a great community center where all sorts of questions affecting Petrolia and the country at large were discussed.

In 1873 the development of the rich flowing well territory in Pennsylvania gave the Canadian oil industry a severe

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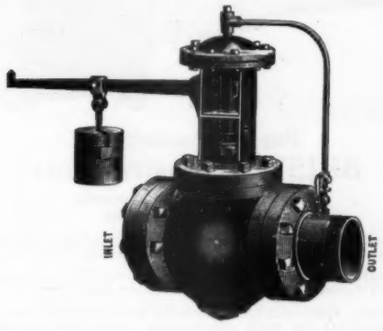

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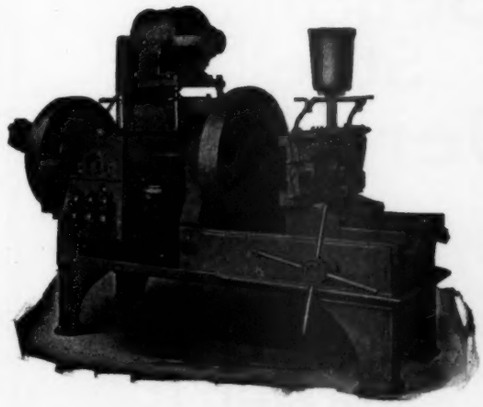

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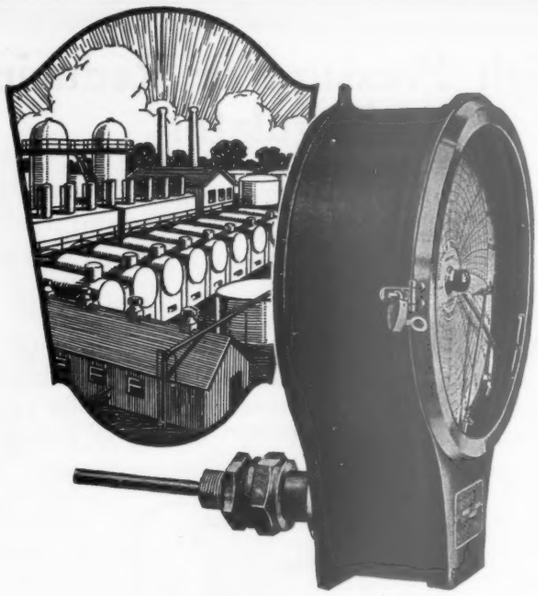

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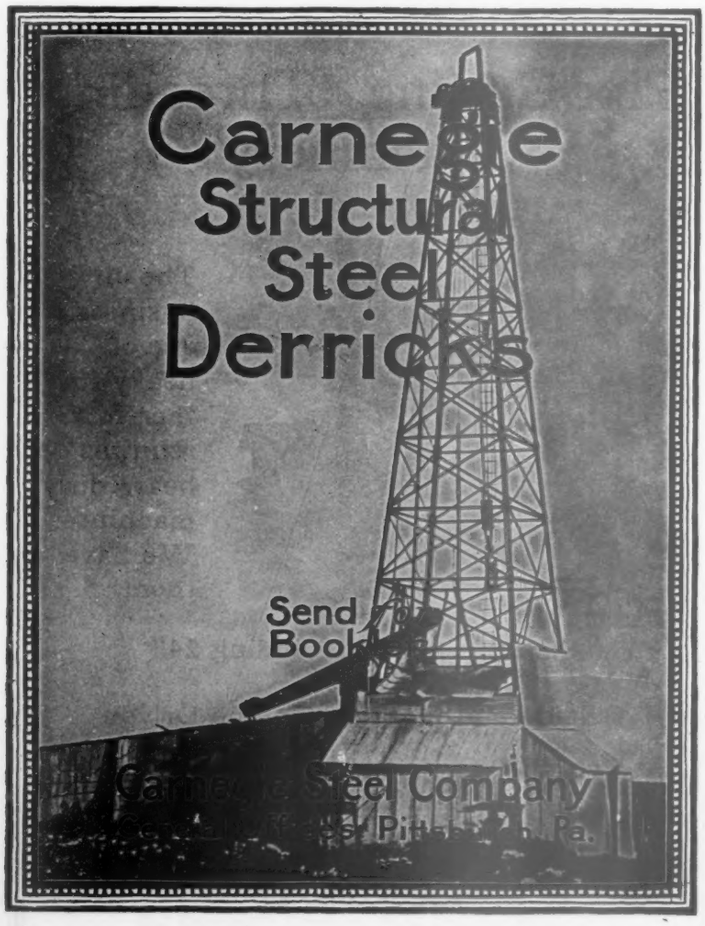

set back. Crude export stopped. The little red bank had to stand a severe strain. The Bank of Montreal stood behind it, however, and the character and resource of Mr. Fairbank retained that support right along. The refining interests in Canada agreed on a uniform policy in selling, the crude oil producers followed their example, and the industry got safely on its feet. The creation of a piping and warehousing system and the concentration of the refineries very largely at Petrolia under the title of the Imperial Oil Co. led to the establishment in the oil town of a branch of the Federal Bank of Canada. Vaughn & Fairbank, however, survived even this competition, the "little red bank on the corner" outlasting the big institution by more than 30 years; though other competing institutions later came in. The years brought changes in management; Leonard B. Vaughn, from the first the dependable "man behind the counter," retired, as did E. D. Kerby, his confidential assistant. John H. Fairbank, the dominant spirit of the early enterprise, was the last of its founders to pass out.

GERMANY'S EFFORTS TO FIND OIL POOLS

(Continued from Page 106)

gard to the region and genesis. The area on which drilling has been executed comprises about 1,000 hectares, that is nearly twice as much as the area of Wietze, but as to the number of wells there have been drilled about 400 only. Drilling was started in Hanigsen not much later than in Wietze but for a long time it was much neglected. Until the first years of this century production amounted only to some hundred tons a year. Further development was sporadic according to the quantity of drillings as per the following figures: 1908, 812 tons; 1909, 6,114 tons; 1910, 18,666 tons. After this height there followed in the next year a decrease to 8,000 tons in 1911. As the exhausted wells could not be sufficiently replaced the sinking of production went on until the amount of 3,000 tons became the normal figure. After that year 1922 brought the new change. In Nienhagen there came in a gusher with an initial daily production of 50 tons, further there followed some others wells which were above the average. The importance of such success lies in the fact that after it had been reached Nienhagen was further explored furnishing new prospects for the location of wells and the depth of the oil production. Against the former depths which are much shallower, there is now reckoned a depth of 600-800 meters and more. In the spring of the present year the new tests were justified with a new gusher with a daily initial production of 300 tons. If the production of Nienhagen is brought again to the height of production in 1910 from the older parts of the field, there is a difference in the fact that the great production is due to single wells yielding quantities formerly not known in Germany. So the present increase of production does not in the same way as in former times depend upon the number of new wells. Thus the commercial utility of the oil industry is improving and also one may hope more than before that Germany will appear on a higher scale among the oil producing countries of the world.

Present Operations

At present 12 wells are being drilled trying to open and to increase the new oil zone of Nienhagen. Some of these must be completed very soon. So it will be seen if single wells with a total production of 10,000 and 20,000 tons within one to two years each are exceptional or if such cases will be repeated. Of course, everybody who is interested in oil production in Germany is eagerly looking forward to the result. The quality of the new Nienhagen oil is also that of heavy oil. A second question to be answered is if also on other fields such spots will be found on the salt domes. That they are not known yet, is no proof against this possibility.

At present there are being drilled in different places of the northwestern part of Germany about 12 wells for the ex-

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ploration of new fields. But many tests of that kind had also been made in former times, which were of no success. So, when in 1910 there was brought in the big gas well at Neuengamme near Hamburg which with a total production of 250,000,000 cubic meters had remained the only important gas producer in Germany. However, more than 10 wells, some very deep, were without success.

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FRENCH POINT OF VIEW ON PETROLEUM

(Continued from Page 36)

ing about the French petroleum policy, it would be wise to secure accurate information and to wait for the facts before bitterly criticizing and sometimes condemning us.

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Number of Motor Vehicles in France

Years—	Number of motor vehicles
1920	202,500
1921	236,146
1922	290,303
1923	444,812

It is predicted by official authorities that the number of motor vehicles will continue to increase during the next few years at the rate at least, of the last few years.

The consumption of gasoline and lubricating oil will of course keep on increasing also. The consumption of gas oil and fuel oil is predicted to be much greater in the near future as the French Navy and the French Merchant Marine are building more and more motor ships and oil burners.

WATERED GAS STOPS BUSES

Watered petrol was stated to be the cause of the breakdown of 40 London buses in the Brixton area, says a London report. An official of the company said the buses were filled with petrol in the morning, but were only able to proceed short distances from the garage. When the cause of the stoppages had been ascertained the petrol was examined, and was found to contain from 30 to 40 per cent of water. How the water got into the petrol is, he added, a mystery. The petrol used was purchased by the company from storage.

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Vacuum Distillation Transition Is Urged By U. S. Physicist

By T. S. Sligh, Jr.

The dilution of the lubricating oil in the crank case which has arisen in recent years, is due largely to the necessity for utilizing fuels of lower volatility (higher end point) than those available before the demand for motor fuels began seriously to approach the limits of available supply.

Some time ago the Bureau of Standards was called upon to make a study of the factors which control dilution.

A letter was sent to oil laboratories requesting information regarding methods employed for measurement of dilution. About fifty replies were received, 60 per cent of which indicated atmospheric, 11 per cent vacuum, and 11 per cent steam distillation methods. The remainder indicated viscosity and evaporation methods.

This summary indicated the rather general need for some suitable method. It is hoped the vacuum distillation method described may meet this need.

Vacuum Distillation Transition

This method of measuring the percentage of fuel diluent is based on the fact that although we do not, in general, have an exact knowledge of the specific nature of the diluent and the oil components of the sample, we can reasonably assume there is an abrupt change in the properties of the hydrocarbon compounds as we proceed from the diluent to the oil.

Distillation affords a convenient method of progressively separating compounds of increasing molecular weight from the sample and the temperature of the saturated vapor may be taken as an indication of the composition of the material passing the thermometer bulb at any stage of the distillation.

If a distillation is made of a charge of the used oil under the proper conditions and a curve plotted of vapor temperatures against volume of distillate the transition from fuel diluent to oil will be indicated by a more or less abrupt rise in vapor temperature.

Experiment has indicated that the point where the curve departs to the right from a straight line A-B drawn through the straight portion of the curve in the transition region best indicates the volume of fuel diluent in the charge. The rational basis for the choice of this point is indicated by the forms of the distillation curves for the fuel diluent and for the oil.

Essential Conditions

The essential conditions of distillation and means for realizing these conditions are as follows:

A. A constant rate of heat supply to the charge throughout the distillation. This may be secured by the use of an electric heater with constant input and an insulated distillation flask.

B. A distillation pressure low enough to preclude cracking or decomposition of the oil before the diluent is distilled off. A pressure of 4 cm. of mercury seems to be suitable for most oils. This exact pressure need not be accurately realized nor controlled as a difference or a slow drift of a few millimeters during a run is not serious. The pressure may be obtained by means of the small gear pumps driven by 1-8 horsepower motors now available or other convenient means.

C. At least a moderate degree of fraction of the vapor is desirable. The necessity for fractionation increases as the boiling points of the fuel and oil components approach each other, but it seems fractionation secured by the use of the insulated flask with steel wool in the vapor column as described later is adequate for present needs.

D. A sufficient number of precise readings of vapor temperatures and corresponding volumes of distillate must be taken to permit the drawing of a smooth curve through the transition region. Readings should be taken for each cubic centimeter of distillate with additional readings for each 1-2 cubic centimeter in the

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transition region and the curve drawn to a scale sufficiently large to permit accurate location of the transition point, X.

In the apparatus used at this Bureau the distillation flask used is that commonly listed as a "250 cc. Engler distillation flask." The stock flask is supplied with straight side tube 6 inches long. For this work about 1 1-2 inches of the end of this tube is bent vertically downwards. A straight tube condenser having an 8-inch water jacket is used. A condenser temperature of 30°C is sufficiently low.

The receiver is a 50 or 100 cc. graduated cylinder with the top edge ground off square below the lip.

The heater is of the Bureau of Mines type, consisting of a heating element imbedded in a refractory insulating material which conforms to the bottom of the distillation flask. An electrical input of about 150 watts is required and the heater may have any capacity greater than this as a regulating rheostat is desirable in any case. Heaters in which the transfer of heat to the flask is due to convective circulation of air are not so satisfactory as those which fit the bottom of the flask closely.

The top of the flask is insulated up to the base of the neck by about 1-2 inch thickness of asbestos wool or its equivalent. About 5 gms of coarse (No. 3) steel wool formed into a cylinder 6 1-2 inches long is located in the flask. This cylinder is recessed at the top for the thermometer bulb.

An A. S. T. M. low range distillation thermometer graduated in Centigrade or Fahrenheit degrees, is mounted in the axis of the neck of the flask with the lower edge of the white enamel backing on a level with the lower edge of the vapor tube. The bulk fits into the recess in the column of steel wool. This tends to steady the thermometer indications and prevents irregularities due to the collection of condensate on the bulb.

The thermometer is fitted in a good cork which fits into the neck of the flask. A little glycerine serves to prevent leakage which should not be permitted at this point, as the presence of air tends to depress the vapor temperatures.

The vapor tube is joined to the condenser by a short piece of rubber tube which is surrounded by a water jacket movable along the axis of the condenser for convenience in assembling. The tip of the vapor tube is wet with glycerine to prevent sticking to the rubber joint.

The receiver is held by the suction against the rubber stopper mounted on the condenser tip. A tube connecting to a manometer through a bypass valve to the atmosphere, and to the source of suction also passes through the stopper.

These particular methods of securing the various joints and of controlling the pressure are suggested as being feasible with the use of ordinary laboratory materials. Other methods of reaching the same end are, of course, permissible.

Mode of Operation

The input to the heater (about 150 watts) is adjusted once for all so as to distill a 100 cc charge of water at the rate of about 2 1-2 cc per minute under atmospheric pressure. All runs are started with the heater hot.

A 100 cc charge of the sample is placed in the flask, the steel woll and thermometer adjusted, the flask placed on the heater, the connections to the condenser made, the pressure in the system brought immediately to the desired value (4 cm) and the insulation placed on the top of the flask. Care should be taken that the flask does not remain too long on the heater before the pressure is reduced to 4 cm as otherwise foaming and carrying over of oil may result. An abrupt reduction in pressure during distillation may also result in foaming.

Readings of vapor temperature are taken at the first drop and at each succeeding cc of distillate until the temperature begins to rise rapidly when readings are taken at each 1-2 cc or oftener, if desired. These readings are continued until the distillate coming over appears to be oil and the rate of temperature rise has begun to decrease. The decrease in

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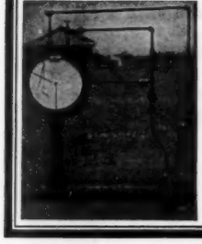
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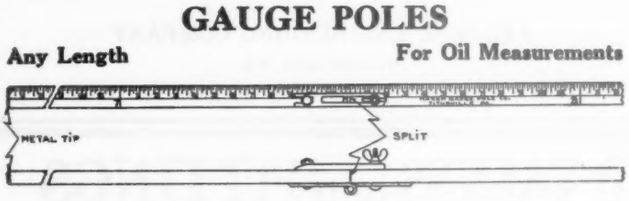

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the differences between successive temperature readings indicates that the transition point has been passed. The time interval between the volume and temperature readings should be uniform and as short as practicable. These observations are tabulated in Table 1.

It is obvious that for approximate work the per cent dilution may be valuated directly from the data as the volume corresponding to the beginning of the decrease in rate of temperature rise. For instance, on this basis, the per cent dilution of the sample run would be taken as 15 1-2 per cent. This approximation may, however, lead to error if temperature readings are not taken at small volume intervals, or if the data are erratic.

Over points (first drop) lower than 65°C (150°F) at 4 cm pressure should be regarded with suspicion as possibly indicating appreciable air leakage into the vapor column. Used oils generally show over points of about 80°C (176°F) except for samples resulting from abnormal conditions of engine operation. If the over-point is really below 65°C (150°F) it may be necessary to reduce the condenser temperature by the use of ice in order to secure complete condensation.

Table 1
Sample Data Sheet
100 cc charge distilled at a pressure of 40 mm. Hg.

Vol cc drop	Temp. Degrees C	Degrees F	Diff. Degrees F
	76	169	
1	86	187	
2	91	196	
3	95	203	
4	99	210	
5	102	219	
6	106	223	
7	110	230	
8	113	236	
9	118	245	
10	122	252	
11	127	260	
12	134	273	
13	142	286	
½	147	295	9
14	153	307	12
½	163	325	18
15	192	378	53
½	221	430	52
16	236	457	27
½	245	473	16
17	253	488	15
18	259	498	

Accurate Results

Data taken on a number of lubricating oils together with those reported by several outside laboratories which have cooperated in checking up the method indicate that results accurate to within 1-2 cc (100 cc sample) may be expected. The agreement between different runs on the same sample in a single laboratory is decidedly better than this.

The diluent used in making up artificial samples correspond to that ordinarily present in used oils. The 20 per cent residue from commercial gasoline after 80 per cent has been distilled off in an Engler distillation approximates this diluent fairly closely.

The method described has the following advantages:

1. A knowledge of the oil or fuel used in the engine from which the used sample is drawn, is not necessary.
2. No cracking or decomposition of the oil takes place during the test.
3. The time required is short, 15 minutes.
4. The evaluation of the result is not influenced appreciably by personal judgment.
5. Measurements of actual vapor temperature are not essential. The requiremnt is that the indicated temperatures in a given test shall be self consistent, as we are interested in the changes in temperature during the run and not in the true temperatures.
6. The accuracy of the test is not affected by moderate changes in procedure. For instance, the rate of distillation or the pressure at which distillation is carried on may be changed by 50 per cent of the specified values without appreciable effect upon the results.
7. The test method is rational rather than empirical and reliable results are obtainable over a wider range of oils and diluents than could be expected from an empirical method.
8. The accuracy is adequate for all present needs.

This method is to be proposed as a standard method for the determination of the percentage of fuel diluent in used crank case oils.

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Indiana	16	114	3	3
Kentucky	96	1,620	18	7
Tennessee	5	25	4	..
Alabama	1	..	1	..
Illinois	15	228	8	..
Kansas	124	4,304	79	14
Oklahoma	382	122,702	116	41
North Central Texas	223	30,518	84	4
East Central Texas	30	76,805	10	..
Gulf Coast	64	8,952	26	..
Southwest Texas	14	5,000	3	..
Louisiana-Arkansas	114	6,557	36	18
Wyoming	43	4,216	7	2
Montana	17	2,380	7	2
Colorado	1	..	1	..
Utah	3	..	1	2
Total December	1,610	265,865	475	213
Total November	1,599	193,083	423	231
Difference	11	72,782	52	18

Rigs and Wells Drilling

Field—	Rigs	Drg.	Total
Eastern	194	394	588
Lima	7	49	56
Central Ohio	40	74	114
Indiana	1	10	11
Kentucky	15	255	270
Tennessee	7	10	17
Mississippi	6	20	26
Alabama	1	9	10
Georgia	1	4	5
Illinois	2	20	22
Kansas	71	358	429
Oklahoma	183	287	1,188
North Central Texas	58	299	357
East Central Texas	126	207	333
Gulf Coast	27	140	167
Southwest Texas	38	90	128
Louisiana-Arkansas	85	210	295
Wyoming	91	281	372
Montana	13	103	116
Colorado	14	75	89
Utah	1	26	27
New Mexico	2	30	32
Total December	981	3,651	4,632
Total November	856	3,465	4,321
Difference	125	186	311

Note—In the following report the Section, Township and Range are given first; then the farm, the owner, the serial number of the well and the initial production of the well. The rigs and wells drilling are set for in similar manner. In lines where the Section, Township and Range are missing the wells are located in the Sections, Townships and Ranges which appear next above in the report.

OKLAHOMA FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Osage	46	8,910	12	3
Tulsa	27	530	15	3
Okmulgee	25	686	14	2
Seminole	77	46,440	4	6
Okfuskee, Hughes and McIntosh	39	23,041	12	4
Muskogee & Wagoner	19	130	10	6
Creek	46	5,340	12	6
Pawnee	14	965	6	..
Kay	12	21,754	1	1
Payne	4	216	2	1
Lincoln	6	482	..	1
Garfield and Noble	13	11,904	2	..
Carter	21	2,054	2	2
Stephens and Cotton	17	195	10	4
Miscellaneous	16	55	11	3
Total December	382	122,702	116	41
Total November	358	94,970	95	56
Difference	24	27,732	21	15

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Total
Tulsa	8	19	27
Osage	7	83	90
Okmulgee	19	42	61
Seminole	22	137	159
Creek	19	67	86
Muskogee and Wagoner	6	31	37
Okfuskee, Hughes and McIntosh	38	139	177
Pawnee	9	52	61
Payne, Lincoln & Kay	21	120	141
Garfield and Noble	9	78	87
Carter	5	47	52
Stephens and Cotton	6	33	39
Miscellaneous	12	139	151
Total December	181	987	1,168
Total November	188	1,044	1,232
Difference	7	57	64

WELLS COMPLETED

OSAGE COUNTY

20-23- 8 Marland Oil 10-B 30
16-26- 6 Carter Oil 11 410
11-27- 5 Carter Oil 12 350
Phillips Pet. 7 300
26-27- 5 Phillips-Skelly Oil 13 20
35-27- 5 Skelly Oil 2 15
6-26-10 Gwynupp et al 1 ..... dry
23-25- 8 Gypsy Oil 1 ..... dry
23-23- 8 Red Bank Oil 5 270
16-26- 6 Carter Oil 12 268
11-27- 5 Carter Oil 16 975
Phillips Petroleum 15 500
16-26-11 Knupp Oil 1 ..... dry
17-27-11 Price Oil 1 ..... dry
18-21- 9 Phillips Pet. Co. 2 75
23-21-10 Titus et al 3 40
21-25- 8 Mid-Kansas Oil & Gas 3 15
11-27- 5 Carter Oil 11 765
27-29-11 Beacon Oil 2 60
5-23-11 C. K. Dresser 1 ..... dry
Owen Osage Oil Co. 306 ..... dry
16-25- 8 Henderson & Holden 5 ..... dry
34-29-11 I. T. I. Oil Co. 1 ..... dry
29-28-11 Sand Springs Home ..... gas
29-28-12 Oklahoma Natural Gas 656 ..... gas
5-21-13 J. C. Stine 3 20
29-25- 8 C. B. Peters 1 10
29-25- 8 Lewis Oil 2 50
26-25- 8 Petroleum Drlg. Co. 11 ..... gas
11-27- 5 Carter Oil 13 320
Carter Oil 14 960
Carter Oil 15 192
11-27- 5 Phillips Petroleum 11 300
14-27- 5 Phillips Petroleum 15 75
18-27- 6 Phillips Petroleum 5 150
17-27-12 Messner & Clough 7 5
13-21-10 T. B. Slick 1 ..... dry
27-21-10 Markham & Breen 1 ..... dry
17-22-11 Owen Osage 307 ..... dry
30-24-9e I. D. Simons et al 1 40
28-25-8e E. B. Lawson 10 2640
29-25-8e The Texas Co. 11 2160
19-25-9e New England Oil 11 40
13-27-5e Carter Oil 12 240
18-27-6e The Texas Co. 5 145
30-29-12 Owen Osage Oil 310 ..... dry

Wells completed 46
Production 11440
Dry 12
Gas 3
Gas production 11,500,000

TULSA COUNTY

36-19-11 Welsey, Regal Oil 1-A ..... gas
20-19-12 Berry, Thornton et al 1-A 40
32-18-14 Harkey, Sax-Fox Oil 4 25
1-17-14 McHenry, Frates Oil 2 85
Drew, Wade & Findley 2 100
14-18-14 Atkins, Broken Arrow Gas 4 .. dry
26-18-14 Harmon, Green et al 1 ..... dry
31-17-13 Unallotted, Noble Oil & Gas 1 dry
5-19-12 Grayson, Echo Oil 11 80
Strip, Fleetwood Oil 1 90
Townsite, H. F. Wilson 1 ..... dry
2-18-13 Sarjo, Thompson & Black 4 .. dry
25-17-12 Varnell, Murphy et al 1 ..... dry
10-17-14 Childers, A. J. Pettit 2 ..... dry
24-16-12 Self, Clark & Holden 1 ..... dry
5-19-12 Grayson, Echo Oil Co. 1 50
15-18-14 Perkins, Broken Arrow Gas 1.. gas
14-19-11 Unallotted, Sand Springs Home 1 ..... dry
7-19-12 Unallotted, Sand Springs Home 1 ..... dry
5-19-12 Partridge, Shaffer O. & R. 3 30
1-17-14 Drew, Green et al 1. ..... dry
13-17-14 Layton, Hazlett et al 1 ..... dry
28-19-10 Cooper, Kessler-Cochran 1... dry
5-18-12 Sizemore, McGinnis 1 ..... dry
2-18-12 Murphy, Minshall O. & G. 3 .. gas
1-17-14 Drew, Wade et al 2 ..... dry
McHenry, Frates Oil 3 30

Wells completed 27
Production 530
Dry 15
Gas 3
Gas production 10,500,000

OKMULGEE COUNTY

3-15-11 Strip, Beggs Oil & Gas 2 30
5-15-11 Grayson, C. A. Wheeler & Wilder 1 ..... dry
5-14-13 Sneed, Mid-Kansas Oil 1 ..... dry
3-15-11 Fee, Clover et al 3 50
Adams, Jackson & Wise 5.... 20
6-15-11 Thompson, Sheridan Oil 1 ... dry
31-14-11 Tiger, George Wittman 1 ... dry
16-14-14 Love, F. D. Misener 5 8
Love, F. D. Misener 4 ..... dry
34-16-12 Vore, Sheldon et al 1 288
32-13-12 Unallotted, Amerada Pet. 1.. gas
26-15-11 Hill, Rickaw et al 2 ..... dry
7-13-15 Freeman, E. J. Lambert 7 ... gas
28-14-14 Andy, W. R. Sommerville 2... 50
23-13-14 Scott, A. G. Hazlett 1 ..... dry
26-13-14 Harris, Lowry 13 ..... dry
13-14-14 Rentie, Elm Oil 11 ..... dry
Fields, Wander-Ritch 6 ..... dry
6-13-11 Webster, Rebold et al 1 ..... dry
28-15-13 Brown, A. Shelton 2 ..... dry
34-16-12 Barnett, Central National 1 .. 100
3-15-11 Kelly, J. B. Kelly & Noble Oil 2 125
11-15-12 Haynes, Gillespie 1 ..... dry
19-13-13 Lee, Acta Oil 4 15
13-13-14 Barnett, Iron Mtn. Oil 6 .... dry

Wells completed 25
Production 686
Dry 14
Gas 2
Gas production 12,750,000

SEMINOLE COUNTY

4-10- 8 Dunn, Waite Phillips 2..... 2650
Dunn, Waite Phillips 3 900
9-10- 8 Hale, Gypsy Oil 6 50
Hale, Carter Oil 1 1006
Hall, Carter Oil 1 765
10-10- 8 Berryhill, Roxana Pet. 2 354
Brown, Carter Oil 2 200
31- 8- 8 Salinda, W. R. Ramsey 1 1031
Salinda, P. & R. Corp. 2..... 895
29- 8- 8 Joseph, Amerada Pet. 2 ..... dry
Walker, Dixie Oil 4 ..... dry
Walker, Homa-Okla Oil 3 ..... dry
8-10- 8 Buckner, The Prairie Oil 3 ... 300
Buckner, The Prairie Oil 4 ... 525
3-10- 8 Yarhola, Gypsy Oil 1 240
4-10- 8 Fixico, Laurel Oil & Gas 1... 110
8-10- 8 Willis, Gypsy Oil 2 1200
9-10- 8 Bruner, Transcontinental Oil and Sinclair 6 2285
Hale, Gypsy Oil 3 360
10-10-8 Hill, Carter Oil 1 60
Hill, Carter Oil 3 73
Berryhill, Kingwood and Sinclair Oil 3 20
15-10- 8 Tiger, Cosden Oil 4 140
16-10- 8 Proctor, Roxana Pet. 1 273
31- 8- 8 Willis, Boggs Oil Co. and Sykes 3 100
8-10- 8 Buckner, The Prairie Oil 5... 800
4-10- 8 Yarbrough, Sinclair Oil 1 ...1352
9-10- 8 Bunner, Pure Oil 7 280
Bunner, Pure Oil 10 67
Bunner, Pure Oil 11 75
Bruner, Transcontinental and Sinclair 7 1600
Hale, Gypsy Oil 2 120
Starr, Amerada Petroleum 2..1574
10-10- 8 Little, Carter Oil 1 ..... gas
16-10- 8 Baker, Superior Oil 4 400
Baker, Superior Oil 5 360
32- 8- 8 Parker, Magnolia Pet. 4 35
4-10- 8 Dunn, Central National 2... 7
Dunn, Central National 3 ... 350
Dunn, Central National 4 ...2350
Dunn, Central National 5....3000
Dunn, Central National 7 2400
Dunn, Central National 8 1950
Jackson, Cosden Oil 3 1150
Jackson, Cosden Oil 7 557
Jackson, Southwestern Pet. 1.2568
Jackson, Southwestern Pet. 2.2400
Wisner, Southwestern Pet. 1.2600
Dunn, Empire G. & F. 1 1126
Dunn, Empire G. & F. 2 700
Fixico, Laurel O. & G. 1 70
8-10- 8 Baker, Tidal-Osage Oil 1 480
9-10- 8 Bunner, Pure Oil 6 40
Bunner, Pure Oil 9 ..... gas
Starr, Carter Oil 4 ..... gas
10-10- 8 Berryhill, Roxana Pet. 4 146
Brown, Carter Oil 4 384
Hill, Carter Oil 2 7
29- 8- 8 Walker, Magnolia Pet. 2 447
31- 8- 8 Willis, Boggs Oil and Sykes 7 450
32- 8- 8 Perryman, Shaffer O. & R. 5 380
32- 8- 8 Walker, Dixie Oil 1 ..... dry
3-10- 8 Yarhola, Roxana Pet. 1 85
Yarhola, Gypsy Oil 3 250
4-10- 8 Dunn, Central National Oil 6 500
Dunn, Waite Phillips Co. 4 ...1885
Jackson, Cosden Oil & Gas 4 .. 800
Jackson, Cosden Oil & Gas 5.. 800
9-10- 8 Bruner, Gardner & Carter Oil 7 gas
Bruner, Gardner & Carter Oil 8 gas
Hale, Gypsy Oil 5 ..... gas
Hale, Gypsy Oil 7 57
16-10- 8 Proctor, Waite Phillips Co. 3 25
31- 8- 8 Willis, Boggs Oil & Sykes 2.. 35
Willis, Boggs Oil & Sykes 8 .. 50
32- 8- 8 Perryman, Shaffer O. & R. 6. 176
Perryman, Shaffer O. & R. 7. 915

Wells completed 77
Production 46440
Dry 4
Gas 6
Gas production 101,000,000

OKFUSKEE, HUGHES AND M'INTOSH COUNTIES

17- 9- 9 Brown, H. F. Wilcox O. & G.1 dry
36-12-10 Fisher, Atlantic O. P. Co. 3.. gas
3-11-11 Hawkins, Tidal Oil 2 ..... dry
15-7n-8e Beaver, P. & R. Corp. 1 .... dry
10-11-13 Bruner, U. S. Zinc Co. 1..... gas
32-12-11 Hulsey, Josey Oil 1 225
4-11-11 Cully, Anglo Texas Oil 1 ..... gas
34-10- 9 Williams, I. T. I. Oil Co. 2....1920
Williams, Gypsy Oil 1 1885
35-10- 9 Sand, Kingwood Oil 1 218
Sand, Kingwood Oil 2 2840
2- 9- 9 Bruner, T. B. Slick et al 1..1375
3- 9- 9 Grayson, T. B. Slick 2 1933
4- 9- 9 Alexander, Papoose Oil 6 ... dry
28-12-10 Johnson, Blakely & McClain 1 15
2- 9- 9 Alexander, T. B. Slick et al 2 967
Alexander, Independent O. & G. 1 2443
Alexander, Independent O. & G. 2 1350
Alexander, Independent O. & G. 1 2162
3- 9- 9 Darke, T. B. Slick 1 1260
Alexander, Cosden Oil 8-W... 400
17- 9- 9 Brown, H. F. Wilcox Oil 3.... 170
9- 9-11 Baker, Mid-Kansas Oil 1 35
33-12-11 Grayson, Anglo-Texas Oil 2... dry
31-10- 9 Carolina, Berry Pet 1 ..... dry
17- 9- 9 Brown, Gilcrease Oil 3 ..... dry
19-12-14 Barnett, Flesher Pet. 1 75
4-13- 8 Saryokiahe, Keener O. & G. Co. dry
21-13- 9 Callahan, Independent O.&G. 1 dry
33-12-11 Hawkins, Josey Oil 1 ..... dry
30-11-10 Grayson, Empire Co. and Jellison 1 ..... gas
13-11-11 Ingram, Lyons & French 4 ... dry
34-10- 9 Williams, Gypsy 2 562
35-10- 9 Sand, Kingwood Oil 3 2497
9- 9-11 Bruner, Mid-Kansas Oil 1 50
1-8- 8 Chupco, Roxana Petroleum 1... 340
12- 8- 8 Cuier, Roxana Petroleum 1... 410
Culler, Roxana Petroleum 2... 109
12-5n-9e Johnson, Douglas Oil 1 ..... dry

Wells completed 39
Production 23041
Dry 12
Gas 4
Gas production 32,500,000

MUSKOGEE AND WAGONER COUNTIES

19-14-19 Harris, M. E. Johnson 1 .... gas
17-15-17 Manuel, H. E. Williams 4.... gas
17-17-16 Boudinot, A. E. Carder 2.... gas
35-15-16 Lee, Harsha 1 ..... gas
17-17-16 Boudinot, J. A. Swindler 1 ... gas
4-17-18 Posey, S. W. Sawyer 1 ..... gas
17-17-16 Chockley, Hintz & Sloman 1 .. dry
19-17-16 Bruner, Hartman & Wright 1 dry
1-17-17 Taylor, W. J. Metzger 4 ..... dry
23-18-16 Childers, F. D. Craver 2..... dry
18-17-15 Pike, Bankers 3 50
25-18-15 McKellop, A. E. Carder 1 50
27-14-15 Smith, A. G. Hazlett 2 ..... dry
7-15-16 Smith, A. Straughn 3 ..... dry
34-17-18 Ware, C. M. Betz 2 ..... dry
17-17-16 Boudinot, J. A. Swindler 2.... dry
20-18-15 Parks, Allen 2 ..... dry
30-17-17 Wilson, W. D. Egolf 2 30
33-17-18 Marlow, J. L. Marshall 1 ..... dry

Wells completed 19
Production 130
Dry 10
Gas 6
Gas production 28,000,000

CREEK COUNTY

13-17-8e Bishop, Madden & Madden 1... 100
23-17-8e Johnson, Savoy Oil 3 60
32-17-8e Washington, O. P. & R. Co. 2 gas
8-16-12 Townsite, Dixie Drlg Co. 1.. 150
Townsite, Stout et al 1 25
Townsite, Wilcox O. & G. 1.... 40
Townsite, Suppees et al 1.. 10
Townsite, Suppees et al 2 ... 250
Townsite, Jones et al 1 25
22-15-10 Friday, Cumberland Oil 1 135
24-14-9e McIntosh, Phillips Pet. 1 ... 925
2-16-11 Olentine, Pulaski Oil 1 ..... dry
5-16- 8e Soldier, Olean Pet. 2 ..... gas
6-16-8e Willis, Olean Pet. 1 300
7-14-7e Lewis, Roxana Pet. 2 20
30-14-8e Kernal, O. P. & R. Co. 2..... 580
4-14-10 Greenwood, Tom Kelly et al 2 270
26-15-8e Narchubby, Buell & Bartlett 1 dry
29-18-10 Sloan, Sapulpa Fuel Co. 2 .... dry
14-18-11 Holden, Acosta et al 2..... dry
7-15-9e Jefferson, Roland Oil 1 ..... dry
21-15-9e Montgomery, Mondt & Clay 1. dry
24-14- 9 McIntosh, The Prairie Oil 1... dry
3-17-11 Fife, S. J. Smith 1 ..... gas
9-16- 9 Childers, Jomac Oil 4 ..... dry
32-17- 8 Artussee, Sartain Bros. 1 ..... gas
30-15- 9 Conn, Billingslea et al 2..... 580
27-15-10 Sewell, Gotham Pet. 1 400
28-14- 9 Jones, Billingslea et al 1.... 480
17-14-10 McNevins, Atlantic Oil 1 75
31-14-10 Harjo, Waite Phillips 2 140
32-14-10 Walker, Empire G. & F. 1.... 270
30-19- 9 Jefferson, Asa Bailey et al 3.. dry
8-16-12 Townsite, Lebow et al 1..... dry
16-14-10 Bear, Josey Oil 1 ..... dry
21-17- 9 Self, The Prairie Oil 3 50
7-14- 7 Stover, Pure Oil 1 280
16-14- 7 Clanton, Gladys Belle Oil 1 ... dry
30-19- 9 Jefferson, Asa Bailey et al 2.. dry
8-16-12 Townsite, L. B. Pratt et al 1 .. 60
Townsite, The Texas Co. 1.... gas
Milliken, The Texas Co. 1.... 125
Townsite, Vick Oil 1 20
30-15- 9 Unallotted, Tibbens Oil 5 .... gas
18-14- 9 Washington, Tibbens et al 2.. 80
24-14- 9 Bear, Cosden O. & G. 1 ..... dry

Wells completed 46
Production 5340
Dry 12
Gas 6
Gas production 120,500,000

PAWNEE COUNTY

5-23-5e Bennett, Haley, Garber & Pulse 2 50
17-20-7e Townsite, Reese et al 4..... 100
Pettit, Galvez Oil 5 275
20-21-8e Martin, Rex Oil 4 ..... dry
32-21-8e Meyers, Adamson et al 2 .... dry
22-20-6e Smith, Westerly Oil 1 ..... dry
16-20-7e School land, Cosden Oil 5 30
School land, Cosden Oil 6 60
17-20- 7 Canfield, Steen et al 2 280
21-20- 6 Ricks, Privett Drlg. Co. 2... dry
8-21- 7 Grain, Freeman et al 1 ..... dry
14-20-5e Hilf, Haley, Garber & Pulse 1 dry
16-20-6e School land, Magnolia Pet. 2. 80
16-20-7e School land, Cosden O. & Gas 7 90

Wells completed 14
Production 965
Dry 6

PAYNE COUNTY

36-19-5e Ellis, Josey Oil 4 216
23-18-3e Derry, Deep Rock Oil 1 ..... gas
17-19-6e Douglas, Carter Oil 2 ..... dry
28-17-3e Keller, Plateau Oil 1 ..... dry

Wells completed 4
Production 216
Dry 2
Gas 1
Gas production 18,000,000

LINCOLN COUNTY

12-14-6e Townsite, Berry et al 1 30
Townsite, Willis et al 1 ..... dry
7-14-5e Ayers, Magnolia Pet. 1 6
6-15-6e Earp, Independent O. & G. 1 120
12-14-6e Townsite, Union Pet. & Supply Co. 5 20
34-15-5e Sproleeder, Magnolia Pet. 1.... 300

Wells completed 6
Production 482
Dry 1

KAY COUNTY

34-25-1w McKee, Wentz Oil Corp. 46..3350
McDaniel, Blackwell Oil & Gas 3-C 2140
17-27-1w Jameson, Carter Oil 1 ..... gas
34-25-1w Woods, Amerada Pet. 27 2515
21-29-1w Priboth, Comar Oil 1 820
34-25-1w Woods, Amerada Pet. 35.....1230
Endicott, Comar Oil 8-W..... 803
Beverlin, Comar Oil 4-W 2816
McKee, Wentz Oil 47 4491
34-25-1w Woods, Amerada Pet. 38 2544
35-25-1w Endicott, Comar Oil 2-W..... 945
19-25-2e Miller, Marland Oil 1 ..... dry

Wells completed 12
Production 21754
Dry 1
Gas 1
Gas production 32,000,000

NOBLE COUNTY

3-24-1w Pettit, Comar Oil 6 ..... dry
2-24-1w Shawver, Gypsy Oil 32 3215
Shawver, Gypsy Oil 43 3530
Shawver, Gypsy Oil 40 1330
Shawver, Gypsy Oil 36 1929
Shawver, Gypsy Oil 39 1741
Shawver, Gypsy Oil 17 1000
20-24-1w Redd, Williams & Day 1 .... dry
29-24-1w Case, Mid-Co. Pet 11-A 5
2-24-1w Blubaugh "A", Comar Oil 23-B 16
11-24-1w Rence, Healdton Oil 2-A 18

Wells completed 11
Production 11884
Dry 2

GARFIELD COUNTY

19-22-3w Kisner, Sinclair Oil 12..... 20
22-21-4w Miller, Alcorn Oil 1 ..... dry

Wells completed 2
Production 20
Dry 1

CARTER COUNTY

28-1s-3w Jennings, Humble Oil 4 154
23-2s-3w Davis, Skelly Oil 2 40
Davis, Twin State Oil 4 150
24-2s-3w Smith, Magnolia Pet. 5 10
25-2s-3w Jefferson, Twin State Oil 6.. 150
34-2s-3w Fee, Love & Thurman 7 ..... gas
32-2s-2w Palmer, Schermerhorn 6-B ... 13
30-2s-2w Brooks, Wirt Franklin 3..... 60
27-5s-3w Williams, Wirt Franklin 5-B. gas
28-5s-1e Westheimer, Amerada Pet. 2.. 220
27-1s-3w Cassidy, Simpson-Fell Oil 1 ... dry
28-1s-3w Champion, Noble-Gault 1 ... 400
Parsons, Tidal Oil 2 140
23-1s-2w Lusk, Humble Oil 2 190
35-2s-3w Brooks, Rockland Oil 8 50

28-5s-1e Clay, Amerada Pet. 2 140
28-1s-3w Parsons, Tidal Oil 3 115
31-2s-2w Bennett, Magnolia Pet. 12... 45
22-4s-2w Hefner, Carter Oil 18 20
10-1s-3w Gray, Magnolia Pet. 1 ..... dry
28-5s-1e Clay, Amerada Pet. 4 157

Wells completed 21
Production 2054
Dry 2
Gas 2
Gas production 43,500,000

STEPHENS AND COTTON COUNTIES

28-1s-9w Fee, Magnolia Pet. 1 ..... gas
22-1s-8w Worrell, Fisher & Brannon 3. gas
18-2s-7w Bristow, Mid-Kansas Oil 3 .. 10
30-2s-7w Enloe, Holbrock et al 1 ..... dry
19-1s-8w Brooks, Lone Star Gas Co. 4 10
6-2n-4w Tollison, Earl C. Frates 1... dry
9-1s-9w Tettleson, Goldenline Oil 1 .... dry
24-1s-9w Reavis, Lone Star Gas Co. 5-A gas
18-1s-8w Johnson, Calhoma 1 ..... gas
9-1s-9w Tettleson, Goldenline Oil 2.... dry
22-1s-8w Wilbur, Pauline Oil 1-A..... dry
29-1s-8w Hall, Magnolia Pet. 2 175
33-1s-8w Stephens, McMan Oil 15 ..... dry
34-1s-5w Zigler, Magnolia Pet. 2 ..... dry
17-2s-7w Wilson, Magnolia Pet. 9..... dry
McDaniel, Avant & Anderson 2 dry
14-2s-6w Norman, Magnolia Pet. 1.... dry

Wells completed 17
Production 195
Dry 10
Gas 4
Gas production 22,250,000

MISCELLANEOUS COUNTIES

Custer County—
17-13-14 Cutfinger, Magnolia Pet. 1.... dry
Garvin County—
16-1n-3w Orr, Magnolia Pet. 9 20
Caddo County—
35-6n-9w Fugate, Acme Dev. Co. 2.... dry
Jefferson County—
33-6s-5w Seay, Empire G. & F. 1 ..... dry
6-4s-4w Mullen Est., Roy Johnson 1... dry
3-7s-7w Unknown, Lugg et al 1 ..... dry
Pontotoc County—
34-3n-4e Norris, Haney et al 1 ..... dry
Coal County—
34-2n-9e Payte, Bearman et al 1 ..... dry
Marshall County—
36-5s-5e Rice, Carpenter et al 2 ..... dry
Mayes County—
26-19-18e Coats, C. E. Campbell 1 .... gas
Sequoyah County—
5-10-26 Faulkner, Industrial 1 ..... dry
23-11-25 Earl, Eureka Oil 1 ..... dry
Pittsburg County—
28-8n-15 Cheadle, Eugenia Oil 1 ..... dry
Grant County—
23-27-3w Martin, Kay Oil 2 ..... gas
Grady County—
25-5n-8w Ree, Briscoe et al 2 ..... gas
2-4n-8w Taylor, Okla. Nat'l Gas 2... gas
Comanche County—
25-1n-9w Ketcham, Humble Oil 4 35

Wells completed 17
Production 55
Dry 11
Gas 4
Gas production 64,000,000

TULSA COUNTY

Rigs

4-19-10 Lindsey, Steel et al 1.
5-19-12 Grayson, Echo Oil 12.
2-18-12 Froe, Edwards et al 2, 3.
5-18-14 Johnson, Brooks Drilling Co. 1.
19-17-13 Coppedge, W. E. Hammond et al 1.
1-17-14 Drew, Wade et al 3.
12-17-14 McIntosh, T. B. Slick 1.

Wells Drilling

4-19-12 Childers, F. B. Jackson et al 1.
5-19-12 Partridge, Thompson & Black 3.
Berryhill, Sand Springs Home 3.
6-19-12 Bruner, Sand Springs Home 7.
27-19-12 Unallotted, Saunders et al 1-A.
24-19-13 Poor Farm, Tulsa County 1.
27-19-14 Marshall, Hall et al 2.
3-17-14 Childers, Hall et al 3.
3-16-12 Whitstone, S. W. Anthony 1.
10-16-12 Jenkins, Thompson & Black 2.
5-16-13 Barthalf, Thompson & Black 3.
15-16-14 Rouncil, Mallory et al 7.

Wells Shut Down

5-19-12 Partridge, Bruner Oil 2.
13-18-12 Donaldson, Assn. Prod. & Ref. 1.
9-18-13 Strip, Pomeroy & Pouder 3.
16-18-13 Perkins, Vick Oil 10.
27-17-12 Hutchins, Bradstreet Oil 1.
16-17-13 Posey, Enfisco Oil 13.
14-16-12 Bawlin, Riverland Oil 2.
Rigs, 8; wells drilling, 19; total, 27.

OSAGE COUNTY

Rigs

34-22-10 Tidal Osage Oil 39.
20-23-8e Red Bank Oil 6.
24-24-9e Tidal Osage Oil 13.
26-24-9e Tidal Comar Oil 3.
33-24-9e Peters Petroleum 5.
13-25-6e Clark & Barnes 1.
27-25-8e Atlantic Oil 5.

Wells Drilling

21-20-11 Sand Springs Home 3, 4.
28-20-11 Gray Oil 6.
14-21-10 Breene et al 3, 4.
T. O. Lillystrand 2.
25-21-10 Titus et al 1.
28-21-10 Sherich et al 2.
6-21-11 Titus et al 7.
30-21-12 Grimes & Gillespie 12.
Barnsdall Oil 17.
31-21-12 Barnsdall Oil 25.
Tidal Osage Oil 3.
27-22-8e Acacia Oil 2.
36-22-8e Sand Springs Home 82.
11-22-10 Gilliland Oil 5.
12-22-11 D. F. Millard 1.
31-22-12 Winona Oil 1.
10-23-8e Superior Oil 1.
McCune et al 1.
13-23-8e Twin State Oil 6.
20-23-8e Red Bank Oil 7.
29-23-8e Red Bank Oil 3.
7-23-11 Owen Osage Oil 309.
12-24-4e Douglas Oil 1.
25-24-8e Price Oil 4.
28-24-9e C. B. Peters Oil 1.
31-24-9e Alexander-Shakley 2.
12-24-10 Barnsdall Oil 17.
33-24-10 C. B. Peters et al 1.
12-25-5e Midland Oil 1.
27-25-8e Atlantic Oil 3, 6.
28-25-8e E. B. Lawson 9.
29-25-8e The Texas Co. 8, 9, 10, 12.
14-25-9e Wolverine Oil 1.
24-25-9e Steyner Oil 4.
1-25-11 Robinson et al 5.
16-26-6e Carter Oil 13.
17-26-6e Cosden Oil 6.
36-26-11 Olean Petroleum 2.
11-27-5e Phillips Petroleum 8.
13-27-5e Carter Oil 5, 9, 11.
14-27-5e Phillips Petroleum 11.
25-27-5e Phillips Petroleum 10.
26-27-5e Mid-Kansas Oil 8.
Skelly Oil 3.
18-27-6e Phillips Petroleum 7-9-13.
18-27-6e The Texas Co. 1, 8, 9, 10.
29-27-8e Seamans et al 2.
10-27-10 Owen Osage Gas 286.
14-28-10 Jackson & Wise 1.
30-28-11 Owen Osage Gas 311.
36-29-11 A. D. Simons 2, 4.

Wells Shut Down

6-22-9e Peters Petroleum 8.
13-22-10 Tidal Oil 18.
15-22-10 Foster-Alexander 1.
34-22-10 Tidal Osage Oil 38.
4-23-10 Rex Pyramid 1.
4-23-10 D. Slingluff 2.
36-24-8e H. V. Foster 36.
23-24-9e H. V. Foster 43.
5-24-11 Grace Maxwell 2.
31-25-7e Vickers & Higgin 1.
28-25-8e E. B. Lawson 11.
30-25-12 Beacon Oil 1.
18-27-6e Phillips Petroleum 10,14.
17-27-10 Presbury et al 3.
9-28-11 Howard et al 1.
9-28-4e Douglas Oil 1.
Rigs, 7; wells drilling, 82; total 89.

OKMULGEE COUNTY

Rigs

34-16-12 Barnett, Central National Oil 3.
Meadors, Meadors & O'Brien 1.
Meadors, Sheldon & Superior 1.
9-15-11 Strip, Indiahoma Refining Co. 2.
12-15-11 Pendleton, Pollyana Oil 8.
5-12-12 Sullivan, Calvin O. Smith 5.
31-12-12 Rentie, Dr. Thomas et al 10.
34-12-12 Holmes, Eagle Picher 6.
Rohnes, C. F. Dickerson 1.
32-11-12 Ashbury, Webb et al 1.
34-16-12 Buff.ngton, Berry Pet. 1.
3-15-11 Grayson, Webster et al 7.
11-15-11 Adams, Cosden O. & G. 5.
28-13-11 Sands, E. R. Black 1.
11-13-12 Bearleman, King & Jackson 2.
15-13-14 Scott, Utah Oil 13.
4-14-13 Sneed, Preston Oil 1.
28-14-14 Andy, W. R. Sommerville 1.
8-14-15 Anderson, J. L. Powell 5.

Wells Drilling

34-16-12 Barnett, Central National Oil 2.
Meadors, Sheldon & Superior 2.
Leyfor, Sheldon Oil 1.
McGee, Sheldon Oil 1.
25-16-14 Roberts, J. H. White et al 1.
3-15-11 Grayson, Webster et al 6.
Galloway, Vise et al 1.
22-15-11 Graham, Sheldon Oil et al 1.
29-15-11 Thompson, Kellough & Thompson 1.
3-15-12 McKee, Gates & Cook Dig. Co. 1.
11-15-12 Cover, Olean Pet. 1.
26-15-12 Havercamp, Briscoe et al 1.
25-14-12 Milner, Mueller, Jordan & Ashley 1.
25-13-11 Kemp, Eastern Oil 8.
28-13-11 Roberts, Mt. State & Clark 1.
32-13-11 Thomas, Denver P. & R. Corp. 4.
6-12-12 Mitchell, Gladys Bell et al 5.
7-12-12 Turner, A. D Morton & Co. 1.
31-12-12 Rentie, Eureka Oil 10.
20-12-13 Henry, So. States Oil 1.
35-12-13 Ponds, Keener 5.
29-13-13 Smith, Monnesett 1.
7-13-15 Freeman, A. G. Hazlett 4.
Bruner, E. J. Lambert 5.
10-14-14 Stevens, Twin State Oil 2.
30-14-14 Thomas, W. B. Pine 1.
22-15-14 Owen, E. B. Grubbs 5.
33-15-14 Fish, A. W. Cline 2.
16-15-15 Tucker, G. S. Wilson 2.

Wells Shut Down

34-16-13 Anderson, Hutchinson & Becker 2.
12-15-11 Pendleton, Pollyana Oil 5.
14-15-12 Sheppard, Frazier et al 1.
16-14-11 Lunsford, Clarion Oil 1.
22-13-11 Smith, C. L. Otter et al 1.
Morgan, Georgia Pet. 2.
32-13-11 Beets, Brook et al 9.
27-12-12 Henry, Eagle Picher 1.
9-11-12 Hawkins, Moffett & Slick 1.
36-12-13 Bruner, Pulaski Oil 7.
16-14-14 Love, F. D. Misener 6.
32-14-15 Carter, R. L. McFann.
Rigs, 19; wells drilling, 41; total, 60.

MUSKOGEE AND WAGONER COUNTIES

Rigs

13-13-15 McGilbray, J. S. McCutcheon 2.
33-14-17 Drake, J. M. Foltz 2.
9-14-18 Wiley, J. S. McCutcheon 3.
9-16-16 Crossley, H. E. Jones 1.
4-17-18 Posey, R. W Sawyer 2.

Wells Drilling

24-12-19 Hood, Fike & Klatt 1.
7-14-19 Tipton, J. W. Hale 2.
7-17-16 Haynie, Briscoe & Harris 1.
17-17-16 Boudinot, O. A. Sewell 2.
33-17-16 Charles, Young et al 1.
34-17-18 Morey, E. M. Swanson 2.
30-18-16 White, A. E. Carder 2.
36-18-17 Green, Archer & Martin 19.

Wells Shut Down

1-14-17 Sango, T-O Pet. 7.
30-14-19 Harris, E. M. Johnson 1.
2-15-16 Perryman, A. B. Ice 2.
25-15-16 Perryman, J. W. Curridan 1.
28-15-16 Canard, J. Summers 2.
32-15-16 Pouncil, J. L. Powell 2.
35-15-16 Lee, W. A. Hutchinson 1.
13-16-15 Hamon, G. D. Shirer 4.
30-16-17 Bennett, Korp & Ford 2.
7-17-16 Haynie, H. H. Orr 2.
25-17-16 Tucker, Larsarskey 1.
29-17-17 Lewis, W. T. Wright 1.
29-17-18 Marshall, E. Coady 1.
29-17-19 Cobb, Aggas & Kirker 1.
18-18-15 Anderson, G. H. Lowe 1.
24-18-15 Taylor, Hughes & McGill 1.
19-18-16 Moody, Shaffer Oil 1.
21-18-16 Tiger, B. B. Wheeler 1.
Tiger, J. L. Towner 5.
29-18-17 Murrell, J. D. Marshall 1.
Trent, J. D. Marshall 1.
23-18-18 Perryman, Aggas & Kirker 1.
35-18-19 Talbert, Aggas & Kirker 1.
Rigs, 5; wells drilling, 31; total, 36.

SEMINOLE COUNTY

Rigs

33-11-8e Jackson, Pure Oil 1.
Pierce, Mutual Oil 2.
Pierce, Sinclair Oil 3, 4.
Williams, Pulaski Oil 1.
3-10-8e Dunn, Carter Oil 2, 3, 4.
4-10-8e Jackson, Cosden Oil 11, 12.
Jackson, Southwestern Pet. 6, 7, 8.
Yarbrough, Sinclair Oil 6, 7.
5-10-8e Sampson, Gypsy Oil 2.
Williams, Magnolia Pet. 1.
8-10-8e Willis, Gypsy Oil 6.
16-10-8e Little, Roxana Pet. 1, 2.
15-10-8e Tiger, Roxana Pet. 2.
24- 9-8e Simon, Kingwood & Empire 1.
15- 8-7e Carolina, Magnolia Pet. 1.

Wells Drilling

22-11-7e Thomas, H. F. Wilcox Oil 1.
33-11-8e Pierce, Mutual Oil 1.
Pierce, Sinclair Oil 1, 2.
34-11-8e Hill, Gardner Pet. 1.
33-10-6e Davis, F. J. Searight 1.
14-10-7e Aldridge, Killibrew & Moore 1.
31-10-7e Lack, Wrightsman & Gardner 1.
3-10-8e Dunn, Carter Oil 1.
Yarhola, Roxana Pet. 2, 3, 5.
Yarhola, Gypsy Oil 2, 4, 5, 6, 7, 8.
4-10-8e Dunn, Waite Phillips Co. 5, 6, 7, 8.
Jackson, Cosden Oil 6, 9, 10, 13, 14, 15.
Jackson, Southwestern Pet. 3, 4, 5.
Wisner, Southwestern Pet. 2, 3, 4, 5, 6, 7, 8.
Dunn, Empire G. & F. 3, 4.
Yarbrough, Sinclair Oil 2, 3, 4, 5, 8.
5-10-8e Fixico, Sinclair Oil 1.
Sampson, Gypsy Oil 1.
8-10-8e Willis, Gypsy Oil 3, 4, 5.
Baker, Tidal-Osage Oil 2.
9-10-8e Bunner, Pure Oil 3, 12.
Bruner, Gardner & Carter Oil 5.
Hale, Gypsy Oil 8.
Hill, Carter Oil 4.
Hall, Carter Oil 2, 3, 4, 5.
10-10-8e Brown, Roxana Pet. 5.
Berryman, Roxana Pet. 3.
Berryhill, Roxana Pet. 3.
Little, Carter Oil 2, 3.
Hill, Carter Oil 4.
Little, McMann Oil 2, 4, 5.
Little, Shaffer Oil 1.
15-10-8e Tiger, Snowden & McSweeney 3.
Yarhola, Cosden Oil 7-W.
Bruner, H. F. Wilcox Oil 8.
Tiger, Roxana Pet. 2.
Harjo, Houston Oil 1, 2, 3.
16-10-8e Roberts, Carter Oil 4, 5.
17-10-8e Buckner, Sinclair Oil 1.
Bruner, Cosden Oil 2, 3.
35- 9-6e Cudjo, Gillette et al 1.
7- 9-8e Cobb, Holmes & Jarvis 1.
16- 9-8e Young, Roxana Pet. 1.
23- 9- 8e Easup, T. Atkins et al 1.
25- 8-7e Yornoh, Magnolia Pet. 1.
Logan, Magnolia Pet. 3.
Rosana, Magnolia Pet. 2.
Howard & Ligon, Dixie Oil 2.
35- 8-7e Jones, Magnolia Pet. 1.
36- 8-7e Cunsah, W. R. Ramsey 1, 2.
2- 8-8e Manley, Southwestern Pet. 1.
19- 8-8e McGiesey, Ramsey & Boggs 1.
28- 8-8e Foster, Dixie Oil 5.
29- 8-8e Josua, Magnolia Pet. 2.
Brown, Magnolia Pet. 1.
Walker, Magnolia Pet. 1.
30- 8- 8e Howard, Magnolia Pet. 2.
31- 8-8e Salinda, Ramsey 1.
Bowlegs, W. R. Ramsey 1.
Willis, Boggs Oil & Sykes 6.
32- 8-8e Parker, Dixie Oil 1.
Tiger, Magnolia Pet. 4.
Walker, Magnolia 1, 2.
Franz, Magnolia Pet. 2.
Aldridge, Magnolia Pet. 1, 2.
33- 8-8e Long, Lewis & Clark 2.
22- 7-7e Davis, Transcontinental Oil 1.
25- 6-6e Mingo, T. B. Slick 2.
33- 6-6e Christy, Maxwell & Harvey 1.
18- 6-7e Sanny, T. B. Slick 1.
27- 6-7e Chupco, T. B. Slick 1.

Shut Down

9-10-8e Hill, Sinclair Oil 2.
10-10-8e Berryman, Roxana Pet. 1-A, 2.
15-10-8e Tiger, Snowden & McSweeney 4.
Tiger, Waite Phillips Co. 1, 2, 3.
16-10-8e Proctor, Roxana Pet. 2.
21-10-8e Hario, Tidal-Osage Oil 3.
13- 9-7e Williams, Independent O. & G. 1.
19- 8-8e Townsite, Ramsey et al 1.
Townsite, Ramsey et al 1.
Townsite, Ramsey et al 1.
30- 8-8e Bowlegs, Gardner Pet. 1.
31- 8-8e Amos, P. & R. Corp. 3.
33- 8-8e Long, Lewis & Clark 3.
Parker, Magnolia Pet. 5.
14- 6-7e Carolina, Link Oil 1.
20- 6-7e Dindy, McDougal et al 1.
6- 6-8e Winey, R. F. Garland & Co. 1.
Rigs, 23; wells drilling, 135; total, 158.

OKFUSKEE, HUGHES AND McINTOSH COUNTIES

Rigs

4-13-8e Saryokishe, Link Oil 2.
36-12-10 Fisher, Atlantic O. P. Co. 4.
Gray, Carter & Atlantic Oil 2.
27-12-11 Holmes, Hartman 1.
36-11-9e Wind, Olean Pet. 2.
2-11-11 Garnett, Tidal Oil et al 1.
3-11-11 Meyers, W. B. Pine 4.
14-11-11 Taylor, No. Baltimore Oil 1.
22-11-11 Holmes, Deaner & Jamison 3.
11-10-8e Little, Roxana Pet. 2.
14-10-8e King, Tidal & Carter Oil 1.
33-10-9e Barnett, Jennings et al 1.
Johnson, Carter Oil 4.
Barnett, Arkansas Fuel Co. 1.
35-10-9e Sand, T. B. Slick et al 8.
24- 9-8e Simon, Burk Greis 1.
2- 9-9e Bruner, T. B. Slick et al 5, 6, 7, 8, 9.
3- 9-9e Grayson, T. B. Slick & Gypsy Oil 4.
McKay, T. B. Slick 3, 4.
Darks, T. B Slick 3, 4.
Alexander, Cosden Oil 4-W.
17- 9-9e Brown, Margay Oil 7.
18- 9-9e Brown, Cosden Oil 1.
Brown, Arkansas Natural Gas 2.
19- 9-9e Charles, R. T. Oil 1.
20- 9-9e Simon, Minnehoma Oil 1.
29- 9-10 McCalvary, Kingwood-Brock et al 1.
4- 9-11 Baker, Magnolia Pet. 1.
9- 9-11 Bruner, Mid-Kansas Oil 2.
12- 8-8e Walker, Roxana Pet. 1.
6- 7-8e Gunn, Dixie Oil 1.
23- 7-8e Manley, Magnolia Pet. 1.

Wells Drilling

1-13-7e Simon, Burk Greis Oil 1.
14-12-8e Billy, Western States Oil 1.
5-13-9e Fixico, West et al 1.
22-12-9e Montgomery, Sinclair Oil 1.
36-12-9e McMahan, Henry Oil & Burk Greis 1.
20-12-10 Watson, Amerada Pet. 1.
23-12-10 Harjo, Blakely et al 1.
25-12-10 Fisher, Wedell & Blakely 1.
36-12-10 Gray, Atlantic O. P. Co. 3.
Fisher, Atlantic O. P. Co. 2.
Brook, Atlantic Oil et al 2.
32-12-11 Fields, Josey Oil 1.
33-12-11 Shelton, Anglo-Texas Oil 1.
Jacobs, Independent O. & G. 1.
McCoy, Josey Oil 3.
19-11-10 Grayson, Gibson & Zahniser 1.
13-11-11 Holmes, Gladys Bell Oil 3.
14-10-8e King, Roxana Pet. 1, 2.
King, Tidal-Osage Oil 2.
King, Snowden & McSweeney 1.
King, Gypsy Oil 1.
King, White Eagle Oil 1.
25-10-8e Bruner, Transcontinental Oil 1.
8-10-9e Morris, Berry Pet. 1.
22-10-9e Samuel, Fuhrman & Shaffer 1.
26-10-9e Sawyer, Bindman-Smith Oil et al 1.
33-10-9e Johnson, Carter Oil 1, 2, 8, 5.
34-10-9e Williams, I. T. I. Oil 1, 3, 4, 6.
34-10-9e Williams, Gypsy Oil 3.
35-10-9e Eand, T. B. Slick 2, 3, 4, 5, 6, 7.
Dunson, T. B. Slick 1, 2.
Carboge, Cosden Oil 1, 2, 3, 4.
Sand, Kingwood Oil 4, 5, 6, 7, 8.
36-10-9e Harjo, Amerada Pet. 1.
35-10-12 McQueen, Carter Oil 1.
1-9-9e Arboy, Josey Oil 1.
Bruner, Independent O. & G. 1, 2.
2- 9-9e Alexander, T. B. Slick et al 1, 2, 4.
Bruner, T. B. Slick et al 2, 3, 4.
Alexander, Independent O. & G. 1, 4, 5.
Alexander S, Independent O. & G. 2, 3, 4.
3- 9-9e Grayson, T. B. Slick & Gypsy Oil 2, 3.
Scott, T. B. Slick et al 2, 3, 4.
Murray, T. B. Slick 1, 3, 4.
McKay, T. B. Slick 2.
Darks, T. B. Slick 2.
Alexander, Cosden Oil 7-W, 16-W.
Arber, Phillips Pet. 1.
4- 9-9e Tiger, Foster Inv. Co. 3-C.
Tiger, Transcontinental Oil 6, 7, 8.
Carter, Skelly Oil 2.
Carter, Mutual Oil 1, 2.
Carter, E. L. Robinson & Amerada Pet. 4, 5.
5- 9-9e Carter, Transcontinental Oil 2.
15- 9-9e Davis, Turman Oil 1.
Smith, T. B. Slick 1.
17- 9-9e Brown, Arkansas Natural Gas 1.
18- 9-9e Brown, Magnolia 3.
22- 9-9e Bowlegs, Gypsy Oil 1.
3- 9-11 Baker, Tidal-Osage Oil 4, 5.
4- 9-11 Baker, Tidal-Osage Oil 1, 4, 5.
Cookman, Tidal-Osage Oil 2.
Baker, Tidal-Osage Oil 1, 2.
Baker, Mid-Kansas Oil 1.
Byrd, Mid-Kansas Oil 2.
9- 9-11 Eason, Mid-Kansas Oil 1.
1- 8-8e Chupco, Berry Pet. 1.
Manley, Sinclair Oil 1.
12- 8-8e Culler, Roxana Pet. 3.
35- 8-8e Jefferson, Johnson & Ashe 1.
18- 8-10 Irvine, Dixie Oil 1.
5- 7-8e Grayson, Dixie Oil 1-B.
8- 6-11 Kiles, Walton, Snyder & Marshall 1.
29-11-14 McIntosh, E. O. Sargent 2.
2-12-16 Wineblood, Montague Texas Oil 1.

Wells Shut Down

25-12-9e Callahan, Wangerine Pet. 1.
8-12-10 Yarhola, Blakely et al 1.
33-12-11 Grayson, Anglo-Texas Oil 3.
25-11-9e Hill, E. R. Robinson & Gibson 1.
1-11-10 Hill, Phillips Pet. 1.
3-11-11 Tarvin, Webster et al 3.
5-11-11 Sears, Hartman et al 1.
27-11-11 Harjo, H. F. Clark 1.
34-11-11 Barnett, Oklavania Oil 3.
26-11-7e Schove, C. J. Wrightsman 1.
33-10-9e Barnett, Midwest & Gulf Oil 1.
17- 9-9e Brown, Margay Oil 1, 2, 5, 6.
Brown, Roxana Pet. 1, 2.
20- 9-9e Simon, Gilcrease Oil 2.
23- 9-9e Bruner, C. J. Wrightsman 1.
1- 8-8e Chupco, Berry Pet. 2.
11- 8-8e Larney, Dixie Oil 1.
4- 5-11 McClain, Mathers & Skelly Oil 1.
14-11-13 Herrod, C. R. King 2.
Rigs, 38; wells drilling, 141; total, 179.

CREEK COUNTY

Rigs

14-19-8e Hinton, Kiskaddon et al 2.
14-17-8e Johnson, Atlantic Oil 2.
23-17-8e Johnson, Savoy Oil 4.
24-17-8e Green, Lima Oil 3.
Fife, Dick B. Mason 1.
32-17-8e Warhington, Savoy & Page 2.
17-15-8e Yarhola, Pure Oil 15.
Wilson, Roxana Pet. 11.
Roberts, Eastern Oil 5.
Roberts, Eastern Oil 8.
20-15-8e Beaver, Skelly Oil 1-A.
30-15-8e Benjamin, Empire G. & F. 1.
18-18-9e Jones, Eva Bell Oil 3.
6-18-11 Haynes, Hartman & Williams 1.
19-17-9e Wright, Hoa-Tah-Bar 2.
18-17-10 Tahkaney, The Texas Co. 1.
6-16-9e Barnett, T. P. C. & O. Co. 1.
20-16-9e Barnett, Dickerson et al 1.
32-16-10 Derr, Phillips Pet. 3.
7-14-9e Yarbrough, C. G. Tibbens 1.
12-14-9e Dixon, Phillips Pet. 1.
13-14-9e Arkorka, Phillips Pet. 1.
17-14-10 McNevins, Atlantic O. P. Co. 2.
15-14-10 Thompson, Donnelly et al 1.
21-14-10 Scott, E. J. Kinder et al 2.
21-16-9e Hendrickson, Jackson & Wise 3.
7-16-12 Townsite, McFarland 1.

Wells Drilling

12-19-8e Grayson, J. B. Greaves 2.
13-19-8e Robinovitz, U. S. Oil 1.
14-19-8e Miller, Oklahoma Eastern Oil 1.
20-19-8e Canard, Steinberger & Smith 1.
30-19-8e Williams, J. R. Chronic 1.
16-18-7e Manuel, Sinclair Oil 8.
11-17-8e Self, Tim Cushing 3.
23-17-8e Grayson, Waite Phillips 3.
24-17-8e Green, Lima Oil 2.
25-17-8e Morrison, Roland Oil 2.
32-17-8e Washington, Olean Pet. 3, 6, 7, 8.
Artusse, Sartain Bros. 2.
Hamilton, Carter Oil 1.
22-16-8e Knoll, Laurel Oil 8.
33-16-8e Larnie, Wolfe Oil 1.
6-15-7e Steele, G. P. & R. Corp. 1.
16-15-8e Knight, Kanawha O. & G. 2.
17-15-8e Mitchell, Jomac Oil 4.
Roberts, Eastern Oil 7.
7-14-7e Jack, Pulaski Oil 1.
Lewis, Charles F. Noble 1.
17-14-8e Har-Lar-Char, Shaffer O. & R. 1.

16-14-8e Johnson, The Texas Co. 3.
17-19-9e Tucker, Gled O. & G. & Shaffer Oil 1.
21-19-9e Cates, Waite Phillips 1.
14-18-11 Holden, Bennett et al 6.
8-18-12 Unallotted, Wilcox & Witton 1.
21-17-9e Charcotenne, Wood & Farren 1.
19-17-10 Wanuke, C. L. Sherman et al 1.
8-17-11 Freeman, Ireland et al 2.
32-17-12 Stewart, Peer Oil et al 1.
9-16-9e Hill, Waite Phillips 1.
9-16-9e Unallotted, Cameron et al 1.
16-16-9e McNoe, Nowata O. & R. 2.
36-16-10 Burford, Independent O. & G. 2.
14-16-11 Cowan, T. A. Creekmore 1.
7-16-12 Conger, Jones & Cravens 1.
8-16-12 Townsite, Foster et al 1.
Townsite, Suppees et al 3, 4.
8-16-12 Townsite, Woodbury et al 1.
Townsite, Hendricks & Vick Oil 1.
Townsite, A. B. Ice 1.
Townsite, A. B. Ice 1.
Townsite, Hall & Crider 1.
Townsite, W. D. Hall et al 1.
17-16-12 Maxwell, Ireland et al 4.
4-15-9e Fahcoconeney, Phillips Pet. 6.
17-15-9e Wife, Turman Oil & Atlantic Oil 1.
23-15-9e Smith, Carter Oil 1.
30-15-9e Unallotted, Billingslea et al 1.
Foster, Billingslea & Skelly 1.
Unallotted, Tibbens O. & G. 3, 4.
22-15-10 Friday, Cumberland Oil 2.
4-14-10 Abraham, Peters Oil 1.
Strip, Wilson et al 1.
17-14-10 Peters, Donnelly et al 2.
Johnson, Hall & Donnelly 2.
20-14-10 Kimble & Reading, Wilcox O. & G. 1, 2.
Stuart, C. F. Noble 1.
Shut Down
14-19-8e Lewis, Gowland et al 1.
22-19-8e Harmon, F. O. Howarth 1.
17-18-7e Starr, Silurian Oil 22,
26-12-8e Wilson, Cortez Oil 6.
Knoll, Laurel O. & G. 7.
29-16-8e Hawkins, Clayton Lynch et al 1.
6-15-7e Emarthia, Oklahoma Nat. Gas 1.
25-15-7e Stewart, Crosby et al 1.
8-15-8e Wilson, Gypsy Oil 3.
7-14-7e Lewis, Roxana Pet. 1.
Stover, Pure Oil 2.
18-18-11 Bruner, McLean et al 3.
32-18-11 Frew, Cross et al 1.
13-17-11 McIntosh, A. Sheldon 1-A.
34-16-9e Brady, Twin State Oil 1.
35-16-10 Froe, Hartman & Williams 1.
7-16-12 Strip, Jordan et al 1.
17-16-12 Funk, R. B. Hartman & Sons 1.
4-15-9e Wisener, Phillips Pet. 4.
5-15-9e Roger, The Texas Co. 1.
31-15-9e Posey, Skelly & Billingslea 1.
4-14-10 Greenwood, Tom Kelly et al 3.
Rigs, 27; wells drilling, 88; total, 115.

PAWNEE COUNTY

Rigs

32-23-3e Robodeaux, Magnolia Pet. 5.
4-22-3e Miller, Magnolia Pet. 7.
5-22-3e Altaffer, Magnolia Pet. 1, 4.
30-23-5e Box, Bemens Oil Corp. 1.
9-20-6e Gowling, Magnolia Pet. 1.
27-20-6e Ellis, The Texas Co. 2-A.
16-20-7e School Land, Cosden Oil 10.
25-20-9e Townsite, Thomas et al 1.

Wells Drilling

32-23-3e Robodeaux, Magnolia Pet. 1, 4.
33-23-3e Brown, Watchorn Oil 1.
Miller, Watchorn Oil 7, 8, 10.
Miller, Marland Oil 2, 4.
4-22-3e Diamond, Magnolia Pet. 1.
Miller, Magnolia Pet. 4, 6.
Ely, Magnolia Pet. 2, 3.
Arkeketa, Magnolia Pet. 1.
Sanders, Magnolia Pet. 3.
Miller, Watchorn Oil 2, 3, 4, 6.
5-22-3e Altaffer, Magnolia Pet. 1.
Wolfe, Magnolia Pet. 2.
Diamond, Watchorn Oil 1.
Droin, Watchorn Oil 1.
8-22-3e Whittenruie, Magnolia Pet. 1.
9-22-3e Childs, Magnolia Pet. 1.
22-23-4e Zoldoskie, Donahoe et al 1.
5-23-5e Phillips, Haley, Garber & Pulse 3.
10-22-6e Towner, J. H. White et al 1.
26-21-4e Schermerhorn, Independent O. & G. 1.
1-21-5e Hill, T. B. Slick 1.
30-21-8e Hart, J. B. Greaves 2.
31-21-8e Hayden, Adamson et al 1.
4-20-5e Davis, Flynn, Morgan & Shaffer 1.
16-20-6e School Land, Magnolia Pet. 3.
22-20-6e Smith, Westerly Oil 1-A, 5.
8-20-7e Fleming, Twin State Oil 4, 5.
9-20-7e Rule, Noble O. & G. 3.
16-20-7e School Land, Cosden Oil 9.
17-20-7e Pettit, T. E. Mann 3, 6.
Shut Down
4-22-3e Miller, Watchorn Oil 1.
26-23-5e Smith, Turman Oil 1.
25-22-6e Bell, Victor Oil 1.
21-21-7e Armstrong, Nixon & Flight 1.
31-21-8e Havercamp, J. B. Greaves 1-A.
21-20-6e Lesher, Magnolia Pet. 1.
Freeman, Josey Oil 2.
28-20-6e White, Texas Drilling Co. 1.
4-20-7e Townsite, Vick Oil 1.
15-20-7e Morahan, Bailey et al 1.
Rigs, 9; wells drilling, 52; total, 61.

PAYNE AND LINCOLN COUNTIES

Rigs

2-20-2e Catt, Colorado O. & G. 1.
9-19-5e Garr, Garr Oil 3.
1-18-5e Laughlin, Josey Oil 2-A.
5-17-4e Flint, Mulberry Oil 1.
7-15-6e Ford, Skelly Oil 1.
10-14-5e Townsite, Davenport O. & G. 1.
13-14-6e Townsite, Union Pet. & Supply 6.
Townsite, Square Deal Oil 1.

Wells Drilling

16-20-2e School Land, Waite Phillips & Gypsy Oil 1.
21-19-1w Lewis, Ponca O. & G. 1.
24-19-1e Jackson, Amerada Pet. 1.
35-19-5e Laughlin, Josey Oil 5.
36-19-5e Ellis, Josey Oil 1.
17-19-6e Moser, Carter Oil 1.
33-18-4e Payne, Mulberry Oil 3.
1-18-5e Laughlin, Home O. & G. 3.
19-17-3e Sutton, Roy Willis et al 1.
22-17-3e Young, Roy Willis et al 1.
16-17-4e School Land, Flynn, Morgan & Bailey 1.
1-17-5e Hughes, O'Herin & Hughes 1.
26-17-5e Strong, Grimes et al 1.
23-16-6e Briggs, Day Oil 1.
22-15-23 Harris, F. O. Howarth 1.
23-15-4e Dodrill, Magnolia Pet. 1.
36-15-4e Cull, Ruby et al 1.
27-15-5e Maness, Magnolia Pet. 1.
34-15-5e Swarts, Magnolia Pet. 1.
1-15-6e Sawyer, Gypsy Oil 1.
2-15-6e Pinkston, McMann Oil 1.
12-14-4e Leake, Pure Oil 1.
20-14-4e Fequay, J. C. Cook 1.
3-14-5e Sproleder, Magnolia 1.
Sukovaty, Magnolia Pet. 1.
Bagwell, Southwestern Pet. 1.
18-14-5e Bray, Magnolia Pet. 1.
12-14-6e Townsite, Dowell et al 2.
Townsite, Union Pet. & Supply Co. 2.
15-14-6e De Lasier, J. C. Cook 1.
14-13-6e Heinzig, P. & R. Corp. 1.
26-12-2e Dodrill, Eugene Costa et al 1.
12-12-3e Smith, Wilcox O. & G. 1.
Shut Down
8-12-5e Richardson, J. C. Cook 1.
6-19-4e Brandon, T. B. Slick 1.
35-19-5e Laughlin, Home Gas Co. 1.
2-18-5e Laughlin, Shaffer O. & R. 9.
16-16-4e Hobson, Wilcox & Oswalt 1.
17-15-3e Powell, Santrock Drg. Co. 1.
15-15-6e Hubbard, Johndahl 1.
2-14-5e Sukovaty, Magnolia Pet. 1.
2-14-6e Schubel, Union Pet. & Waite Phillips 1.
12-14-6e Townsite, Union Pet. & Supply Co. 8.
Townsite, Hoyt & Wicker 1.
Townsite, Atlas Drg. Co. 1.
7-13-3e Ewing, Douglas Oil 1.
18-13-5e Gallagher, Sun Ray Oil 1.
5-13-6e Lewis, Mt. State Oil 1.
Rigs, 8; wells drilling, 48; total, 56.

KAY COUNTY

Rigs

20-29-1w Day, The Texas Co. 1.
9-27-1w Burkholder, Poling & Denny 1.
12-26-2w North, Alcorn Oil 3.
Diller, Alcorn Oil 1.
Hubbard, Alcorn Oil 3.
McCullough, Alcorn Oil 2, 3.
34-25-1w Beverlin, Comar Oil 12-W, 19-W.
35-25-1w Ogg, Comar Oil 3-W, 7-W.
Endicott, Comar Oil 4-W, 9-W.
Goltry, Carter Oil 14.

Wells Drilling

15-29-1w Branine, McComas & Jarvis 1.
17-29-1w Moore, Twin State Oil 1.
21-29-1w McCormick, Comar Oil 1.
McCormick "B", Comar Oil 1, 2.
Harvel, Comar Oil 1.
22-29-1w LeMars, White Eagle Oil 1.
15-29-1e Davidson, Lancer 1.
15-28-1e Tranary, Grand Island Oil 1.
9-27-1w Cumler, Blackwell O. & G. 1.
Brown, Harris & Haun 1.
10-27-1w Humphries, Blackwell O.&G. 2.
18-27-1w Johnson, Una Lee Oil 1.
27-27-1e Lewis, Alcorn Oil 1.
1-26-2w Fitzgerald, Alcorn Oil 1.
Hockstatter, Alcorn Oil 1.
8-26-2w Vannatta, Day Oil 1.
12-26-2w North, Alcorn Oil 1, 2.
Hubbard, Alcorn Oil 2.
McCullough, Alcorn Oil 1.
13-26-2w School Land, Magnolia Pet. 1.
28-26-2w Carr, O-Kansas Oil 1.
15-25-2e Thomas, Alcorn Oil 2.
16-25-2w McFarland, Alcorn Oil 1.
21-25-2w Turk, Alcorn Oil 1.
22-25-2w Siler, Twin State Oil 2.
27-25-1w Davis, The Texas Co. 7.
Suiter, McMann Oil 1.
28-25-1w Siler, Louis Freedman 1.
34-25-1w Woods, Amerada Pet. 39, 40.
Endicott, Pennok Oil 6-D.
Beverlin, Comar Oil 2-W, 3-W, 7-W, 8-W, 15-W, 18-W.
McKee, Wentz Oil Corp. 48, 49, 50.
McDaniels, Phillips Pet. 6.
32-25-1w Ogg, Comar Oil 1-W, 5-W.
Endicott, Comar Oil 2-W.
Endicott, T. B. Slick 4-E.
Goltry, Carter Oil 8, 11, 12.

Shut Down

25-29-2w Sheets, Hickman & Barnhart 1.
21-29-1w Friboth, Comar Oil 2.
11-28-1e Lowery, Okla. Northern Oil 1.
16-27-1w Jewell, National Union Oil 2.
13-27-1w School Land, P.&R. Corp. 1.
4-25-2w Kreger, Clair Smith 1.
16-25-2w Thomas, Alcorn Oil 1.
McFarland, Alcorn Oil 2.
21-25-2w Thomas, McCaskey & Wentz 1.
Turk, Carter Oil 2.
27-25-2w Simmons, W. E. Brown Oil 1.
36-25-2w Davis, Marland & Embry 1.
27-25-1w Suiter, McMann Oil 5.
30-25-1w School Land, Cosden & Marland Oil 3-A.
34-25-1w McDaniels, Phillips Pet. 4, 5.
35-25-1w Ogg, Comar Oil 4-W, 6-W.
Endicott, Comar Oil 3-W.
Goltry, Carter Oil 13, 15.
Rigs, 14; wells drilling, 71; total, 85.

GARFIELD AND NOBLE COUNTIES

Rigs

2-24-1w Blubaugh "C", Comar Oil 4-W, 7-A.
Blubaugh "A", Comar Oil 24-W, 25-W.
25-23-1w Burnsides, Jankowsky et al 1.
29-21-1e Thelle, Bolt Pet. 1.
19-22-3w Kisner, Sinclair Oil 13.
11-21-4w Fee, Beople et al 1.
7-21-3w Kellner, Chaffee et al 1.

Wells Drilling

2-24-1w Shawver, Gypsy Oil 24, 87, 88, 90, 91, 92, 93.
Blubaugh "C", Comar Oil 1-W, 3-W, 5-A, 9.
Blubaugh "A", Comar Oil 1-W, 5-W, 8-W, 12-W, 13-W, 14-W, 15-W, 17-W.
Gaume, Comar Oil 3, 3-W, 8-W, 9-W, 10-W, 11-W, 12-W, 14-W, 15-W.
3-24-1w Pettit, Comar Oil 2-W, 5-W, 9-W, 10-W, 15-W, 17-W, 19-W.
Ruzek, Comar Oil 3-W.
Ruzek, Blackwell O. & G. 4-D.
9-24-1w Crober, John Herron 1.
11-24-1w McCutchcon, Comar Oil 1.
30-24-1w Wilkins, Mid-Co Pet. 1-A.
14-24-2e Edmonds, Ossenbeck et al 1.
4-21-2w Burke, Spencer & Vickery 1.
30-21-1w Grim, Twin State Oil 1.
32-20-1e Hall, Nelson & Hardin 1.
27-21-3e Dollarhide, Marland Oil 1.
13-22-4w Walker, Sinclair 17.
24-22-4w Belveal, Sinclair Oil 25.
26-22-4w Bangerter, Sinclair Oil 2.
18-22-3w Hartley, Sinclair Oil 7.
19-22-3w Crews, Sinclair 15.
30-22-3w Crews, Sinclair Oil 10.
31-22-3w Morrison, Sinclair Oil 8.

Shut Down

22-24-2w Kurby, Wilkins & Kors 1.
2-24-1w Gaume, Comar Oil 4-W.
3-24-1w Pettit, Comar Oil 18-B.
11-24-1w Rence, Healdton O. & G. 13-B.
20-24-2e Ray, Ossenbeck et al 1.
15-23-2w Washburn, Mid-Co Pet. 13.
Neal, Tidal Osage Oil 15.
1-22-2w White, Frank Kelley et al 1.
15-21-2w Sand, Bu-Vi-Bar 1.
12-21-3e Sawyer, Ossenbeck & McMan 1.
17-23-8w Dyche, Jack Reid et al 1.
26-22-7w Cox, Katherine Oil Synd. 1.
6-23-6w Hess, Wier & Wood 1.
16-23-3w School Land, Monahan et al 1.
3-22-5w Swinery, J. H. Pringle 1.
25-22-4w Hotson, Empire G. & F. 10.
36-22-4w Heim, Rabbit Foot Oil 10.
Heim, Imo Oil 8.
13-22-3w Butts, Brown & Morris 1.
18-22-3w Schroeder, Roxana Pet. 5.
2-21-7w Montgomery, Frank Frantz 1.
31-21-5w Vanderwork, E. A. Summers 1.
12-21-4w Schriver, Beople et al 1.
7-20-6w Semrad, Hastie, Smith & Jens Marie Oil 1.
19-20-5w Ray, Summers & Atlantic Oil 1.
13-20-4w Faramel, Summers et al 1.
25-20-4w Rhodes, William King 1.
Rigs, 9; wells drilling, 79; total, 88.

CARTER COUNTY

Rigs

18-1s-3w Hardin, Magnolia Pet. 1-E.
28-1s-3w Jennings, Templeman & Frantz 2.
8-3s-2w Mullen, Coline Oil 2.
McGill, Schermerhorn Oil 2, 3.

Wells Drilling

19-1s-2w Movis, McGee 1.
18-1s-3w Hardin, Magnolia Pet. 1.
19-1s-3w Hardin, Magnolia Pet. 1.
27-1s-3w Poland, W. & D. Newstadt 1.
Poland, Twin State Oil 1.
28-1s-3w Halen, Humble Oil 1, 2.
Jennings, Humble Oil 3.
Miller, Humble Oil 1.
29-1s-3w Miller, Humble Oil 1.
Spears, Magnolia Pet. 1.
32-1s-3w Johnson, Magnolia Pet. 2.
33-1s-3w Lusk, Humble Oil 3.
34-1s-3w Fish, Magnolia Pet. 1.
35-1s-3w Williams, Magnolia Pet. 1.
12-2s-3w Pierce, Coline Oil 6.
33-2s-3w Williams, Fitzgerald 3.
26-2s-3w Swart, Magnolia Pet. 1.
27-2s-3w Hefner, Magnolia Pet. 11.
Fee, C. R. Smith 6.
35-2s-3w Brooks, Rockland Oil 9.
36-2s-3w Chute, Tidal Oil 4.
31-2s-2w Palmer, Patsy Kirk Oil 5-A.
Bennett, Patsy Kirk Oil 13.
32-2s-2w Palmer, Schermerhorn Oil 5.
6-3s-2w Bogle, Healdton Pet. 2.
8-3s-2w Mullen, Coline Oil 1.
Ledbetter, Coline Oil 1.
20-5s-1e Criner, Amerada Pet. 5, 6.
Farve, Amerada Pet. 18.
Gardner, Amerada Pet. 5.
28-5s-1e Clay, Amerada Pet. 3.
Westheimer, Amerada Pet. 3.
Fee, Westheimer Oil 1.

Shut Down

22-2s-3w Lohman, Wirt Franklin 2.
25-2s-3w Simpson, Skelly Oil 2.
27-2s-3w Fee, C. R. Smith 5.
8-3s-2w Harrison, Noble Oil 1.
27-3s-2e Brown, Home Oil 1.
4-4s-3w Jones, Coline Oil 37.
21-4s-3w Noble, Skelly Oil 13.
22-4s-3w Okla-Dillar, Humble Oil 8.
Dillard, Humble Oil 9.
16-4s-1e Bishop, Felmlee et al 1.
13-5s-3w Beal, Wickenhiser 1.
5-5s-2w Lewis, Coline Oil 1.
Rigs, 5; wells drilling, 47; total, 52.

STEPHENS AND COTTON COUNTIES

Rigs

24-1s- 9w Johnson, Magnolia Pet. 5.
25-1s- 9w Edmundson, Carter Oil 2.
22-1s- 8w Worrell, Fisher & Brannon 4.
30-1s- 8w Brown, Lone Star Gas 8.
24-2s- 8w Andrea, Magnolia Pet. 2.
14-3s- 5w Reed, Lone Star Gas 2.

Wells Drilling

2-2n- 5w Symms, Gant et al 2.
31-1n- 8w Malechi, Coline Oil 2.
23-1n- 4w Edwards, Russell, Grimes & Atlantic 1.
23-1s-10w Bondurant, A. A. Peard 4.
13-1s- 9w Schove, Magnolia 6.
24-1s- 9w Armstrong, Best of All Oil 1-A.
25-1s- 9w Edmundson, Carter Oil 1.
5-1s- 8w Armstead, Gant et al 1.
14-1s- 8w Kickuk, Magnolia Pet. 1.
18-1s- 8w Johnson, Magnolia 1.
19-1s- 8w Brooks, Lone Star Gas 5.
22-1s- 8w Warner, C. & O. Drlg. Co. 2.
27-1s- 8w Schick, Grigsby Oil 2.
30-1s- 8w Clarkson, Lone Star Gas 4.
32-1s- 8w Blaydes, Amerada Pet. 11.
33-1s- 8w School Land, Magnolia Pet. 16.
11-1s- 4w Womack, Magnolia Pet. 1.
28-2s-13w Dyer, Carter et al 1.
11-2s-11w Revelle, Continental Oil 2.
26-2s-11w Fox, Shaffer & Sultan 3.
7-2s- 8w Mitchell, Luffborough & Ryan 1.
13-2s- 8w McMaster, Anderson & Schoomaker 1.
Mooks, Magnolia Pet. 3.
36-2s- 8w Enloe, Wells, Pearson & Smith 1.
15-2s- 7w Toney, Magnolia Pet. 2.
3-2s- 5w Webb, Magnolia Pet. 6.
11-2s- 5w Martin, Magnolia Pet. 2.
11-3s- 8w Beale, C. E. Starr 1.
15-3s- 5w Bohannand, Lone Star Gas 1.

Shut Down

19-1s- 8w Bridenthal, Ellis Drlg. Co. 4.
20-1s- 8w Bartley, Magnolia Pet. 9.
4-1s- 7w Fee, Ballard & Shoptaw 1.
13-5s-13w Day, Fisher et al 1.
Rigs, 6; wells drilling, 33; total, 39.

SOUTHERN OKLAHOMA

Rigs

Jefferson County—
7-5s-9w Unknown, W. E. Norton 1.
4-6s-5w Brown, Ely et al 1.

Wells Drilling and Shut Down
(Shut down wells indicated by *)

Tillman County—
11-1s-17 Faulkner, H. S. & H. Oil 1*.
7-2s-18 Duncan, Overbee, Crone & Kirkwood 4*.
10-4s-10 Cough, A. E. Spears 1*.
4-5s-14 Goehler, Schwartz et al 1.

Jefferson County—
31-4s-8w Anderson, Counell Oil 1.
21-5s-6w Cowden, Tarkington & Kelsey 1*.
34-5s-6w Major, Barker et al 1*.
36-5s-4w Woodwarth, Godley Oil 1*.
25-6s-6w Spring, Magnolia Pet. 1.
18-6s-5w Grayson, Heydrick et al 1.
29-6s-5w Seay, Humble Oil 1.
31-6s-5w Seay, Cameron & Anderson 1.
33-7s-6w Standfield, Landis et al 1.
4-7s-5w Seay, Cherry & Coush 1*.

Atoka County—
1-2s-9e Fee, J. P. Torrence et al 1*.
7-2s-8e Wild-McPherson 1*.
28-2s-9e Underwood, Wapanucka Dev. Co. 1*.
17-4s-11 Dabney, Hanson et al 1*.

Johnson County—
7-4s-4e Troots, Washita O. & G. 1*.
36-5s-6e Holden, United 8 Oil 1*.

Love County—
29-6s-3e Starritt, Simms Oil 1.
11-7s-2e Wilson, Driller Synd. Oil 1*.

Bryan County—
26-7s-11 Hampton, Alexander 1*.

Murray County—
2-2n-5e Fine, Black & Thompson 1*.
Rigs, 2; wells drilling, 24; total, 26.

MISCELLANEOUS COUNTIES

Rigs

Woodward County—
4-23-17 Nordyke, Diamond Drlg. 1.

Kingfisher County—
7-19-5w James, Jens Marie et al 1.

Garvin County—
13-1n-3w Wyatt, Magnolia Pet. 5.

Grady County—
31-10-5w Unknown, Hawkins & Young 1.
16-4n-6w Bryant, Roy Nash et al 1.
35-3n-5w Lindsey, Gant et al 2.

Beckham County—
35-9n-24w Brown, Steve Nelson 1.

Comanche County—
10-1n-9w Roy, A. B. Cook 1.

Logan County—
33-18-3w Quier, Haldy & Pioneer Pet. 1.
35-17-4w Field, McMunn & Nixon 1.

Mayes County—
26-19-18 Coats, C. E. Campbell 2.

Wells Drilling and Shut Down
(Shut down wells indicated by *)

Grant County—
29-29-4w Ridings, Phillips Pet. 1.
8-27-8w Moon, Midwest and Gulf 1*.
30-27-4w Fuss, Frank Traves et al 1*.
2-27-3w Webb, Marland Oil 1.
14-27-3w Howell, Western States Oil 1*.
22-27-3w Stewart, Western States Oil 4-A.
23-27-3w Crouch, Western States Oil 3.
27-27-3w Lane, Western States Oil 1*.
20-26-4w Edwards, Embry & Leright 1*.

Alfalfa County—
21-27-10w Watts, McGinnis & Ward 1*.
23-24-11w Turnbull, Armstrong, Henley & Peffley 1.

Woods County—
10-25-15w Van Buskirk, Victor Oil 1*.

Ellis County—
32-24-24w Meegan, Utility O. & G. 1*.
2-21-24w James, Gage Oil 1*.
10-21-24w Cross, Utility O. & G. 1*.
22-20-24w Roper, Chicago Okla. Oil 1*.

Major County—
36-22-14w Cheyenne Basin, Texas Prod. Co. 1*
9-22-9w Ratcliff, Bradstreet Oil 1.
36-22-11 Gray, Frantz & Slick 1*.

Woodward County—
34-20-20w Bell, Beard O. & G. 1*.

Logan County—
32-19-3w Newman, Skelly Oil 1.
5-19-2w Ohm, Gilliland Oil 1.
28-18-4w Moore, Franklin Oil Assn. 1.
9-18-2w Wyatt, Benhoma Oil 1*.
28-16-1w Lair, Blackford O. & G. 1.
36-15-2w Johnson, Okla. Drlg. Co. 1*.
23-15-1e Pritchard, Magnolia Pet. 1.

Dewey County—
7-18-15w Chronister, Meyers et al 1*.
22-16-18w Elders, A. D. Morton 1*.

Kingfisher County—
14-17-5w McCord, Casing Royalty Co. 1*.
25-17-5w Sickerson, Carson et al 1.
30-16-9w Burson, Pansy O. & G. 1*.
31-15-7w Lewis, F. & N. Oil 1*.
17-15-6w Creaves, Chi Oil & Nichols 1*.

Blaine County—
26-15-12w Dickerson, Thompson 1*.
21-15-10w Eklemeier, Okomo Oil 1*.

Cimarron County—
2-5n-5e Schock, Campbell & Riley 1*.
16-1n-7e Wells Ranch, Beaver O. & G. 1*.

Beaver County—
33-5n-28e Unknown, Gates Valley Oil 1*.

Pottawatomie County—
4-5n-5e McFarland, Riverside Oil 1*.
13-11-3e Floyd, Gwinnup et al 1.
13-10-2e Howell, Ossie Oil 1.
25-10-4e Midgett, North American Oil 1*.
24- 8-4e Stoner, Maude Oil Products 1*.
19- 7-4e Neghan, McMan 1*.
18- 7-5e Yinson, Maude Oil Products 1*.
16- 6-2e McGahey, Davis Detrick 1*.
9- 5-3e Ball, Day Oil 1.
4- 5-5e Fiddler, Halmond Osmond et al 1*.

Pontotoc County—
31- 5-5e Lewis, La Salle et al 1*.
32-5n-5e Brown, Brinson et al 1.
34-5n-6e Roy, Bowles & Smith 1.
19-5n-7e Dener, Harper et al 1.
24-4n-4e Floyd, C. J. Wrightsman 1.
5-4n-5e Starritt, Craig et al 1*.
3-4n-6e McDaniel, American O. & R. 1.
6-4n-6e Curry, American O. & R. 1*.
17-4n-6e Witherspoon, American O. & R. 2*.
18-4n-6e McClure, Bryan & Gillett 1.
27-4n-6e Parry, Pilgrim Pet. 1.
31-4n-6e Harden, T. P. C. & O. 1.
34-4n-6e Norris, Smith & Lancaster 1*.
14-4n-7e Norris & Beck, Howarth O. & G. 1.
28-4n-7e Faulkner, Hughes et al 1.
15-3n-6e Hays, Galloway et al 1*.
6-3n-7e Lloyd, Lloyd & Smith 1.

Canadian County—
34-13-9w Dawson, Thomas Revelle 1.
2-13-8w Setter, Carrol & Zwiecher 1*.

Oklahoma County—
36-11-3w School land, Firestone Oil 1.

Cleveland County—
31-10-4w Holland, Garr Oil 1*.

Garvin County—
21-4n-1w Florence, Bedman et al 1*.
10-3n-3e Hattle, Heath & Bauman 1*.
12-2n-3e Dellbeck, Goldenline Oil 1*.
11-1n-3w Hervy, Magnolia Pet. 1-B.
Harkreader, Concord Oil 5*.
14-1n-3w Jones, Magnolia Pet. 10.
Mays-Newberry, Magnolia Pet. 4.
16-1n-3w Harris, Magnolia Pet. 5.
18-1n-3w Derdyn, Simms Oil 1*.
35-1n-3w Riddle, T. P. C. & O. Co. 1*.
8-1n-2w Franklin, Tidal-Osage 1.
18-1n-1e Richardson 1*.
9-2n-2e Gibson, Black Petroleum 1*.

Roger Mills County—
15-15-26w McClure, Twin Hills Oil 1*.
3-13-26w Unknown, Trio Oil 1*.
Custer County—
34-13-14w Unknown, Hoover Oil 1.
Beckham County—
24-9-25w Unknown, W. H. Sheldon 1*.
6-9-24w Burkholder, J. A. Pringle 1*.
24-8-22w Unknown, J. R. Lines 1*.
19-8-21w Van Vector, Kadane et al 1*.
31-8-21w Wall, Kouri et al 1*.
9-8n-15w Prettears, McCoy et al 1*.
Washita County—
9-8n-15w Prettears, McCoy et al 1*.
Greer County—
3-7n-22w Johnson, Neal et al 1.
26-7n-22w Bowman, White & Debolt 1*.
17-7n-21w Unknown, Morton & Neal 1*.
4-3n-22w Van Vector, Boso & Terrill 1.
Kiowa County—
3-7n-17w Countryman, Aubyme 1.
20-7n-16w Williams, Connor et al 1.
13-7n-16w Unknown, Alcorn Oil 1*.
Grady County—
19-6n-5w Cook, Langston O. & G. 1*.
14-5n-8w Irwin, Cotton Patch Oil 1.
23-5n-8w Edmondson, Skelly Oil 1.
26-5n-8w Farwell, Little Nick Oil 2.
Smith, Sun Ray et al 2.
35-5n-8w McCaughtry, Hagerling et al 2.
22-5n-7w Unknown, Badgett & Hughes 2.
2-4n-8w Drydon, Carter Oil 1.
26-4n-6w Pursley, Nash et al 1.
28-3n-5w Pearcay, Magnolia Pet. 1.
Jackson County—
36-2n-23w Unknown, J. D. Wade 1.
15-1s-23w Snodgrass, J. R. Abernathy 1*.
Comanche County—
24-2n-10w Cox, Cherry & Coush 1*.
29-1n-12w Bentley et al 1*.
25-1n- 9w Hines, Ka-Wye Drig Co. 3.
Marshall County—
24-5s-5e Rice, Reese et al 1*.
Latimer County—
7-5n-18e Hunt, P. & F. Pet. 1*.
10-6n-21e Young, J. S. Cochran 1*.
Le Flore County—
17-5n-25e Lucas, H. Randall 1.
Pittsburg County—
29-6n-13e Townsend, E. T. Richards 1*.
Haskell County—
3-9n-18e Phillips, Haskell Drig. Co. 1*.
27-9n-18e Curry, J. D. Clark 1*.
4-9n-20e Dewbre, H. U. Bartlett 1*.
Rigs, 11; wells drilling 123; total, 134.

KANSAS FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Butler	3	....	3	..
Cowley	18	2,070	8	6
Elk and Chautauqua	16	55	9	4
Greenwood	15	515	5	1
Wilson	9	120	7	1
Montgomery	36	884	27	1
Woodson	3	85	1	..
Lyon	4	50	3	..
Sumner	4	....	4	..
Miscellaneous	16	525	12	1
Total December	124	4,304	79	14
Total November	92	6,126	42	7
Difference	32	1,822	37	7

Summary of Rigs and Wells Drilling

County—	Rigs	Drg.	Total
Butler	3	25	28
Cowley	13	72	85
Elk and Chautauqua	4	27	31
Greenwood	25	56	81
Montgomery	6	37	43
Russell	2	10	12
Sumner	5	13	18
Wilson	1	10	11
Woodson	1	10	11
Miscellaneous	11	98	709
Total December	71	358	439
Total November	80	312	392
Difference	9	46	37

BUTLER COUNTY

Wells Completed

10-28-6e Slaybaugh, Mid-Kansas Oil 2.. dry
17-27-7e Knox, Braden Bros. & Ellis 2. dry
25-27-4e Skaer, Peoples Oil 1 ..... dry

Wells completed 3
Dry 3

COWLEY COUNTY

24-32-4e Kukuk, Buffalo Trust Co. 7.... 550
19-32-3e Carson, T. B. Slick 1 590
3-33-3e Poor, Gypsy Oil 1 400
20-34-4e Baird, Joe Nathon & Brinn 2.. gas
4-33-3e Alexander, Waite Phillips Oil 1 dry
14-30-4e Magnuson, Casseday Oil 5 25
31-30-6e Crouch, Titus 3 100
17-34-4e Goff, Kano-Tex Ref. 1 ..... gas
20-34-4e Goff, Joe Nathon et al 2 ..... gas
30-30-6e Bice, Lewis Oil 1 ..... dry
13-31-5e Harrod, Southwestern Pet. 1.. dry
32-34-4e Keithley, Watchorn O. & G. 1 dry
4-33-6e Cochran, Reynolds-Merriam & Findeiss 1 ..... dry
31-30-6e Crouch, Lewis Oil 3 150
10-31-3e Shaffer, Trees Oil 1 75
12-32-4e Holt, Neely & Marland 1..... 80
24-32-4e Ditmer, J. A. Hull 3 100
17-34-4e Goff, Kan-O Tex Ref. 2 ..... gas

Wells completed 18
Production 2070
Dry 5
Gas 4
Gas production 7,600,000

ELK AND CHAUTAUQUA COUNTIES

8-32-11 Cunningham, Denman Bros. 1. dry
8-29-9e Thompson, C. C. Nye 1 ..... dry
27-29-9e Thompson, Wilson & Phillips 1 dry
18-32-10 Green, Page et al 1 30
28-29-9e Smith, Ohio Fuel Oil 2 ..... gas
34-29-9e Herrod, Dietriche et al 3 15
14-31-10 Chaffin, Pure Oil 1 30
28-29-9e Wheeler, Lemmon et al 1 .... dry
17-30-9e Hyde, Ritchey & Moore 1 .... dry
30-30-11 Beaty, Pennok Oil 2 ..... dry
32-29-9e Smith, Ohio Fuel 1 ..... gas
26-29-9e Perkins, Mitchell & Ark Fuel 1 gas
27-29-13 Merryfield, J. G. Buell et al 1 dry
16-30-13 Hawks, Thompson & Moore 1 . gas
33-30-13 Hastings, Buell & Curtis 1 .... dry
Hastings, Buell & Curtis 2 .... dry

Wells completed 16
Production 65
Dry 9
Gas 4
Gas production 18,500,000

GREENWOOD COUNTY

13-22-10 Derybshire, Pryor & Lockhart 1 50
22-22-11 Bersie, J. H. Milliken 2 120
32-24-13 Wright, Smith & McGinnis 1.. dry
36-23-9e Teeter, Derby & Polhamus 1.. dry
8-22-10 Pixlee, Theta Oil 1 15
19-22-10 Browning, R. G. Gillespie 7.... 150
22-22-11 South, Tidal Oil 3 30
32-22-11 De Malorie, York State Oil 4. 50
2-23-9e Green, J. B. Murphy 1 15
31-23-10 Martindale, Mid-Kansas Oil 8. 75
28-26-9e Kuhn, Magnolia Pet. 2 ..... gas
26-28-9e Dermick, Miller & Jarrett 1.. dry
22-22-11 Richards, Fisher, Lauck & Moore 1 ..... dry
8-25-9e Gregg & Coulter, Connell & White Eagle 1 ..... dry
28-26-9e Kline, Magnolia Pet. 2 10

Wells completed 15
Production 515
Dry 5
Gas 1
Gas production 5

MONTGOMERY COUNTY

12-33-16 Good, John Harwood et al 1... 250
13-33-16 Zutz, Independence Fuel Oil 2 50
1-35-16 Fairbond, Overfield & French 1 150
13-31-15 West, Treas Oil 1 ..... dry
9-32-14 McVey, Foster et al 1 ..... dry
18-33-14 Brooks, Dexter & Cook 1 ..... dry
1-33-13 Foreman, F. M. Clark 1 ..... dry
31-33-15 Farlow, Talbott et al 1 ..... dry
6-35-15 Taylor, Keystone Oil 1 ..... dry
Dynell, S. C. Canary 3 ..... dry
21-32-15 Clemmer, The Prairie Oil 1 .. 94
35-31-16 Murphy, McMannis & Bigson 1 dry
24-32-16 Surbon, Red Bank Oil 1 ..... dry
6-35-15 Dynell, S. C. Canary 2 15
22-31-17 Botkin, Shyrock et al 1 ..... dry
28-32-14 Coleman, Red Bank Oil 3 .... dry
33-32-14 Good, Homer T. Lamb 3 ..... dry
24-31-13 Dickey, Southwestern Gas 1 .. dry
36-31-14 Shoewalker, Osage Oil 1 ..... dry
10-31-16 Hagen, Pennant Oil 1 ..... dry
19-31-17 Busby, Ark. Fuel Oil 1 ..... dry
21-31-17 Tavender, Keithley et al 1 .... dry
32-32-14 Morris, O. N. Tucker et al 1 .. dry
21-32-15 Edwards, Black Landon & Prairie Oil 1 80
14-32-16 Miller, Buckley et al 1 ..... dry
2-33-16 Rundell, Frank Swift 1 ..... dry
9-33-16 Budke, Sturnburg et al 1 .... dry
12-33-16 Good, Cross Producing Co. 1 .. 35
Zutz, Wilkins et al 2 ..... dry
Good, Empire G. & F. 1 180
32-33-16 Clark, Dunn et al 1 ..... dry
16-33-17 Gergen, Thayer et al 1 ..... dry
22-33-17 Leff, Appleman et al 1 ..... dry
16-34-15 Dobson, Morrison & Everby 1.. dry
23-24-15 Truby, O. A. Crane 1 ..... gas
2-35-13 Noble, Prairie, Black & Landon 1 ..... dry

Wells completed 36
Production 884
Dry 27
Gas 1
Gas production 500,000

MISCELLANEOUS COUNTIES

Neosho County—
35-29-19 McMullen, Burton & Aken 1.. gas
31-27-18 Tennis, Parkins et al 1 ..... dry
Rice County—
7-20-6w Bush, Emerson & Carey 1 ... dry
Russell County—
24-12-15 Haize, P. & R. Corp. 1 ..... dry
1-14-11 Diessroth, J. Garfield Buel 1.. dry
29-11-15w Dodge, White Eagle Oil 1.... 125
Woodson County—
1-24-14 Weide, Arkansas Fuel Oil Co. 1 dry
32-23-15 Weide, Rodgers & Hinkle 4 ... 10
2-24-14 Allen, Iowa-Kansas Dev. Co. 1. 75
Labette County—
26-33-18 Ralston, W. J. Shultz et al 1. dry
35-33-17 Evitts, Lampton & Shannon 1.. dry
Wilson County—
36-30-15 Simpson, Elmer P. Sewell 1 .. dry
24-30-15 Jones, Cole & Neff 1 ..... dry
16-30-15 Fulbright, Ladow & Stryker 1 dry
20-27-17-Swank, Phipps & Fisher 1..... dry
17-27-16 Bushfield, Mortimer & Walker 1 120
24-28-16 Van Vickle, Foster Oil 1 .... dry
35-29-14 Odell, Callahan et al 1 ..... gas
29-29-17 Callahan, Callahan et al 1 .... dry
14-30-13 Malone, Pulaski Oil 1 ..... dry
Marion County—
5-22-4e Townsend, Watchorn O. & G. 38 50
17-21-4e Warner, National Ref. 1 350
20-22-5e Martin, Phillips Pet. 1 ..... dry
Barton County—
11-16-12w Shauf, Jasper & Beschka 1.. dry
Reno County—
2-25-6w Mohr, Jennings, Pells & Star 1 dry
Lyon County—
31-21-12e Jones, Schwartz et al 1 50
4-21-12 Greider, Jennings Bros. 1 .... dry
20-21-12 Haughton, Southwestern Pet. 1 dry
22-21-12 Jeanerett, Balaire et al 1 .... dry
Chase County—
21-22-8e Crocker, J. A. Corbett et al 1.. dry
Harvey County—
9-21-12 Getz, Wahn et al 1 ..... dry
Sumner County—
27-32-2w Brummett, Phillips Pet. 1 .... dry
8-33-3w Felt, Phillips Pet. 1 ..... dry
15-35-1e Pickett, Floyd O. Howarth 1. dry
Walker, Floyd O. Howarth 1. dry

Wells completed 15
Production 525
Dry 12
Gas 1
Gas production 3,000,000

BUTLER COUNTY

Rigs

32-24-4e Penner, Vickers Pet. 1.
32-26-6e Palmer, Foraker et al 1.
27-28-5e Cameron, Elwell et al 2.

Wells Drilling

26-24-3e Brenner, Sanford-Garden & Glidden 1.
31-24-4e Maxwell, Potwin Oil 1.
3-25-3e Brainerd, E. B. Shawver et al 1.
5-25-4e Fitch, Phillips Pet. 1.
10-26-3e Glancy, Hawkins 1.
22-27-6e Stern Wentz et al 1.
22-28-5e Crawley, H. B. Garden 2.
27-28-5e Meyers, Ramsey et al 2.
Meyers, Shawver & Strosnyder 5.
30-29-3e Robins, Walters Pet. 1.

Shut Down

21-24-3e Harder, Walter Hoyt 1.
36-24-4e Baryemeyer, Robinson et al 1.
18-24-5e Joseph, Kightlinger et al 1.
27-24-6e Burson, Frank & Imperial Oil 1
33-24-8e Lample, Tom Miller 1.
7-26-5e Higgins, Allen et al 2.
32-26-8e Palmer, Sparta Oil 1.
24-27-4e Weidline, Weidline et al 1.
33-27-7e Hamilton, Beckers et al 1.
22-28-6e Pettit, John Sharp 1.
29-29-5e Clevenger, Shawver et al 1.
12-29-6e Lammonyon, Tobin et al 1.
Rigs, 3; wells drilling, 22; total, 25.

ELK AND CHATAUQUA COUNTIES

Rigs

2-33-8e Shaver, Ajax Drg. Co. 1.
16-34-9e Kinnman, J. A. Brauk et al 1.
13-29-8e Hanna, C. E. Roth et al 3.
7-35-13 Albright, Noble O. & G. 1.

Wells Drilling

17-32-11 Kingston, Denman Bros. 1.
16-32-13 Hoover, Glidden Oil 1.
24-33-10 Holyrod, H. P. Glidden 1.
10-34-9e Fisher, T. B. Slick 1.
24-34-9e Moffitt, Page et al 1.
31-34-10 Houston, Noble O. & G. 1.
4-34-13 Carra, Victor Martin 1.
24-28-11 Holliday, Jones et al 1.
13-29-8e Porter, Empire G. & F. 2.
3-30-9e Denton, Watchorn Oil 5.
10-30-9e Kyser, Imperial Drg. Co. 1.
35-30-9e Lawyer, Clark Oil 1.
30-30-13 Sharp, Curtis et al 1.
33-30-13 Bailey, Shaffer O. & R. 1.
21-31-9e Hand, Anderson Bros. 1.
Stiles, Triplet Oil 1.
5-31-11 Osborne, Crawford & Reagan 1.
15-31-12 McCurry, Gibson et al 1.
33-31-12 Hughes, Southwestern Gas 1.

Shut Down

33-32-10 Wiggam, The Texas Co. 1.
1-33-8e Reed, Hatlock et al 1.
11-33-10 Chamberlain, Fisher Oil 1.
5-33-12 Fish, Garner et al 1.
3-35-8e Holyrod, Buck et al 1.
4-29-10 Baughman, Imperial Drg. Co. 1.
19-39-9e Packard, Ritchey & Moore 1.
5-30-12 Rader, Kurtz et al 1.
22-31-8e Ewers, Denman Bros. 5.
Rigs, 4; wells drilling, 28; total, 32.

COWLEY COUNTY

Rigs

31-30-6e Crouch, Lewis Oil 4.
Crouch, Titus et al 4.
1-30-7e Mahanna, Arkansas Fuel Oil 1.
10-31-3e Shaffer, Trees Oil 2.
11-31-3e Clark, Arkansas Fuel Oil 2.
30-31-5e Coffey, C. E. Roth 3.
13-32-4e Spengler, Sinclair Oil 1.
24-32-4e Kukuk, J. A. Hull 9.
3-33-3e Orr, Marland Oil 1.
9-33-3e Johnson, Waite Phillips 2.
10-33-3e Bowen, Marland Oil 2.
Spruen, Roxana Pet. 2.
17-33-3e Thurlow, Wents Oil 1.
7-34-3e Tuttle, Waite Phillips 1.

Wells Drilling

11-30-4e Joslin, Pryor & Lockhart 1.
16-30-4e Starkey, C. E. Ash 1.
24-30-6e Ward, Chas. Christy 1.
4-30-8e Hanna, C. E. Roth et al 4.
11-31-3e Clark, Arkansas Fuel Oil 1.
14-31-4e Sherwood, Trees Oil 1.
35-31-4e McKnab, Indian Territory Ill. 1.
18-31-5e Shannon, Arkansas River Gas 1.
5-31-6e Eastman, Shawver & Sutter 1.
Eastman, Martin & Wilson 4.
21-31-6e Eddie, Marland Oil 1.
19-32-3e Waite, Carter Oil 1.
Conrad, T. B. Slick et al 1.
Waite, T. B. Slick et al 1.
26-32-3e Tinker, Marland Oil 1.
30-32-3e Nevitt, Marland Oil 1.
3-32-4e McKnab, I. T. Oil 1.
13-32-4e Rockwell, Marland & Neely 1.
24-32-4e Shannon, Gypsy Oil 4, 7.
Kukuk, J. A. Hull 10, 11.
Wallace, J. A. Hull 9.
Ditmer, J. A. Hull 5, 6, 7.
25-32-4e Binger, White Eagle O. & R. 1.
31-32-4e Welr, Day & Bunnell 1.
7-32-5e Crosby, Arkansas Fuel Oil 1.
9-33-3e Johnson, Waite Phillips 1.
Spruen, Roxana Pet. 1.
Graham, Marland Oil 2, 3, 4, 5.
10-33-3e Wright, Marland Oil 1, 2, 3.
Bowen, Marland Oil 1.
Spruen, Roxana Pet. 1.
17-33-3e Thurlow, Waite Phillips Pet. 1.
18-33-3e Patterson, Waite Phillips 1.
19-33-3e Heshet, T. B. Slick & Marland 1.
20-33-3e Glasgow, Waite Phillips & Marland Oil 1, 2, 5.
Backus, Waite Phillips 2
Wertman, Waite Phillips & Marland Oil 7, 8, 9.
Johnson, Waite Phillips & Marland Oil, 4, 5.
21-33-3e Snyder, Waite Phillips & Marland Oil 1.
29-33-3e Beatty, Waite Phillips & Marland Oil 1.
Hansen, Waite Phillips 1.
Johnson-True, Waite Phillips 1.
34-33-3e Shehan, Marland & Alcorn Oil 1.
17-34-3e Baird, Shawver & Elwell 1.
5-35-5e Sterling, Springstead & Overlease 1.
10-35-5e Warren, Trees Oil 1.

Shut Down

29-30-5e Dunbar, Alcorn Oil 1.
33-30-7e Clover, Scott et al 1.
26-31-3e McKinley, Arkansas Fuel Oil 1.
13-32-4e Lierman, Marland Oil 1.
24-32-4e Shanon, Gypsy Oil 3, 5.
34-32-4e Poor Farm, Chas. E. Dye et al 1.
20-33-3e Wertman, Waite Phillips & Marland Oil 10.
24-33-6e Sandstrum, Torrence & Torrence 2.
33-34-3e Bocastow, Rich et al 1.
1-35-7e Olsen, T. B. Slick 7.
Rigs, 14, wells drilling, 71; total, 85.

GREENWOOD COUNTY

Rigs

17-22-10 Browning, Rhodes & Able 8.
18-22-10 Browning, Rhodes & Able 5.
7-22-11 Malone & Souder, Davis & Alyard 1.
22-22-11 South, Tidal Oil 4.
28-22-11 Clark, Phillips Pet. 8.
2-23-9e Hartley, Reverly et al 1.
10-23-9e Green, Rodgers, Bittler et al 1.
15-23-9e Teeter, Skelly Oil 4.
29-23-10 Thrall, Mission Oil & Roth 23.
32-23-10 McKee, Phillips Pet. 17, 18, 19.
5-23-11 Seeley, Phillips Pet. 12.
8-23-11 Clopton, Empire G. & F. 12.
4-23-13 Inthurm, Skelly Oil 1.
23-24-9e Wiggins, Roger & Mission 3.
6-24-10 Cartwright, Federal Oil 3.
15-24-12 Moran, Omar Oil 1.
21-24-12 Johnson Polhamus et al 1.
16-24-13 Blackwell, Rhodes & Able 1.
3-25-9e Hover, Phillips Pet. 5.
4-25-9e Hurley, Pure Oil 3.
9-25-9e Greeg-Coulter, Lewis Oil 1.
28-26-9e Kline, Magnolia Pet. 3.
28-26-13 Ingersol, Maitland Oil 1.

Wells Drilling

13-22-10 Derbyshire, Pryor & Lockhart 2.
Kipfer, Syndicate Oil 1.
Kipfer, Ward McGinnis 1.
Derbyshire, Simmons & Burke 1.
19-22-10 Browning, Sinclair Oil 7.
20-22-10 Browning, Sinclair Oil 8.
30-22-10 Prather, Titus et al 1.
22-22-11 Bersie, Henderson & Holden & Milikin 3.
32-22-11 De Malorie, York State Oil 6.
34-22-13 Kraft, Braden Bros. 3.
2-23-9e Green, Transcontinental Oil 2.
15-23-9e Teeter, Phillips Pet. 2, 3.
Teeter, Skelly Oil 1, 2, 3.
Teeter, Skelly Oil & Emerald Oil
Teeter, McGinnis & Bittler 1, 2, 3.
16-23-9e Teeter, Empire G. & F. 16.
28-23-10 Thrall, Mission Oil & Roth 41.
29-23-10 Thrall, Mission Oil 44.
Thrall, C. E. Roth & W. Phillips
31-23-10 Martindale, Mid-Kansas Oil 13.
3-23-13 Souder, Theta Oil 8.
15-23-13 Schneider, Shaffer & Howell 1.
20-23-13 Gribblin, R. G. Gillespie 3.
27-24-9e Hill, Fontaine et al 1.
34-24-9e Marshall, Polhamus et al 13.
6-24-10 Cartwright, Federal Oil 2.
23-24-10 Edwards, Jno. Edwards et al 1.
15-24-12 Johnson, Skelly Oil 3.
28-24-13 Morris, Kittle et al 1.
31-24-13 Cox, Chas. Christy 1.
16-25-9e Coulter, Rodgers et al 2.
19-25-9e Ladd, Mid-Kansas Oil 5, 6.
33-25-10 Bagger, Kiskadden & Farr 1.
30-25-13 Brown, Cory et al 1.
6-25-13 Gilroy, Bisagno et al 4.
24-26-9e Weivshing, Landers et al 1.
25-26-11 Kiser, T. E. Miller 1.

Shut Down

12-22-10 Sowder, O. J. Connell et al 1.
13-22-10 Warrensburg, Skelly Oil 1.
22-22-11 Cravet, Phillips Pet. 2.
1-23-9e Shambaugh, Youker et al 1.
32-23-10 Thrall, Mission Oil 5.
26-23-11 Ellis, Eugenia Oil 1.
27-24-9e Wiggins, Carter Oil 1.
12-25-8e Beckett, Roth & Farout 2.
7-25-9e Wilkinson, S. M. Griggs 1.
27-25-9e Sallyards, Duncan et al 1.
14-25-10 Norman, Jno. Jackson 1.
18-28-9e Dixon, Jamison et al 1.
Rigs, 25; wells drilling, 56; total, 81.

MONTGOMERY COUNTY

Rigs

35-32-14 Drybread, Irish et al 1.
5-32-16 Brinkman, T. R. Cowell 1.
35-32-16 Riddins, Hancock Drg. Co. 1.
12-33-16 Painter, Superior Oil 1.
35-33-16 Feits, Voise & Tabor 1.
5-35-15 Taylor, Keystone Oil 1.

Wells Drilling

20-31-15 Hudinburg, Orbin et al 1.
1-31-16 Dougherty, Hazlett & Wells 1.
19-31-16 Clark, Pennant Oil & Goldrick 1.
2-32-13 Neiman, Dunn et al 1.
23-32-14 Cox, Hobson et al 1.
36-32-16 Wybenger, Bloom et al 1.
29-32-17 Helluns, Earl & Overfield 1.
24-33-13 Brooks, Steinberger Bros. 1.
25-33-14 Mason, Vanniman et al 1.
11-33-16 Zutz, Wilkins et al 1.
12-33-16 Thomas, Roth & Faurot 1.
Good, Harwood & Hazlett 2.
Good, Cross Producing Co. 2, 3.
Thompson, Wilkins et al 3.
Thompson, Homer Lamb 1.
Good, Empire G. & F. 2.
13-33-16 Remington, Reed & King 1.
6-33-17 Howard, Stryker et al 1.
7-33-16 Rogell, Harwood & Haslett 1.
30-33-17 Bunk, Wolf & Brown 1.
9-34-14 Eaton, R. G. Gillespie 1.
28-34-14 Owens, Phillips Pet. 1.
31-34-15 Reed, Connelly et al 1.
10-34-16 Ingram, Fisher & Lauck 1.
12-35-16 Wilson, Tex-O-Kan Oil 1.
4-35-17 Welker, Galloway & Roberts 1.

Shut Down

31-31-14 Faler, Remler et al 1.
13-32-14 Sloan, Galbraith 1.
3-33-14 Kick, Smith & Thomas 1.
23-33-14 Miller, J. F. Mergens et al 1.
30-33-16 Davis, J. E. Weible et al 1.
3-33-17 Bellairs, Coffeyville Brick Co. 1.
4-33-17 Hall, Townsell et al 1.
25-34-13 Petterson, H. R. Nelson et al 1.
12-35-14 Van Deent, Orlando Pet. 1.
1-25-16 City of Coffeyville, Ed Karns 1.
Rigs, 6; wells drilling, 37; total, 43.

RUSSELL COUNTY

Rigs

17-12-15w Oswald-Valentius, Valerius Oil 1.
18-12-15w Oswald, Skelly Oil 1.

Wells Drilling

33-12-11w Cooper, Pomeroy et al 1.
5-12-15w Sutton, Derby et al 1.
8-12-15w Oswald, Streeter & Stearns 1.
Oswald, Valerius Oil 3.
9-14-15w Mermis, Producers & Refiners 1.
36-15-13w Seller, Alcorn Oil 1.

Shut Down

13-11-13w Poposhill, Sawtelle et al 1.
23-12-11w Dick, Ritchey & Moore 1.
8-12-15w Oswald, Streeter & Stearns 2.
24-13-13 Harbaugh, Lee Bullock et al 1.
Rigs, 2; wells drilling, 10; total, 12.

SUMNER COUNTY

Rigs

16-30-4w Rutz, Cosden Oil 1.
14-34-2e Melick, Marland Oil 1.
22-34-2e Lindsey, Marland 1.
26-34-2e Warner, Marland Oil 1.
6-35-1e Milligen, Tidal Oil 1.

Wells Drilling

12-30-4w Smith, Phillips Pet. 1.
9-32-1e Harkins, Waite Phillips 1.
29-32-2e Veail, Phillips Pet. 1.
26-33-1e Pruett, Waite Phillips 1.
25-33-2e Wood, Brady Bros. 1.
29-33-2e Works, Phillips Pet. 1.
16-35-1e Stewart, National Union Oil 1.
8-30-2e Stubbs Land Co., McKnab & Burt 1.
16-30-1w Hitchcock, Champlin Refg. 1.
17-30-1w Kraft, Champlin Refg. 1.

Shut Down

7-30-1w Slutter, Ellis et al 1.
16-30-1w Hitchcock, Champlin Refg. 2.
34-31-1w Hayes, Shawver & Sutter 1.
Rigs, 5; wells drilling, 13; total, 18.

WILSON COUNTY

Rigs

6-28-16e Prunty, Noble O. & G. 1.

Wells Drilling

2-28-13e Newman, Guinnup et al 1.
9-29-17e Stevens, Franklin Oil 1.
22-30-15 Edwards, Bryan & Stinson 1.
27-30-15 Blair, H. P. Glidden 1.

Shut Down

24-29-13e Claybone, Gillock et al 1.
2-27-14e Brown, Rhodes & French 1.
31-30-14e Asheraff, Kors et al 1.
32-30-17e Smalley, West & Williams 1.
32-30-17e Thompson, Hauck & Bevore 1.
31-29-17e Ford, Callahan et al 1.
Rigs, 1; wells drilling, 10; total, 11.

WOODSON COUNTY
Rigs
1-24-14e Weide, Arkansas Fuel Oil 1.
Wells Drilling
23-23-13e Bahr, Peerless Oil &.
29-23-15e Guy, Parish et al 1.
32-23-15e Weide, Rodgers & Hinkle 5.
13-24-13e Rhea, Skelly Oil 1.
5-24-14e Allen, Iowa-Kansas Dev. Co. 2.
29-25-14e Fry, Curtis Oil 1.
Shut Down
23-23-13e Hessler, Empire G. & F. Co. 2.
31-23-15e Weide, Franklin Oil 1.
4-26-14e Lauber, Herman & Oglesby 1.
30-26-17e Solomon, Equity Oil 1.
Rigs, 1; wells drilling, 10; total, 11.

MISCELLANEOUS COUNTIES
Rigs
Coffey County—
33-20-15e Andrews, Sunbeam Pet. 1.
Harvey County—
4-23-2e Hawk, Mason & Ralston 3.
Lane County—
11-18-27w Dickinson, Richards Refg. 1.
Lincoln County—
29-12-8w Rohwer, Eisenhour et al 1.
McPherson County—
3-17-2w Anderson, Wynn et al 1.
3-18-2w Anderson, Young et al 1.
Morris County—
32-14-7e Barber, Kline et al 1.
Ness County—
35-18-21w Ryarsee, Bell & Sarton 1.
Pottawatomie County—
17- 9-12e Stewart, Crawford et al 1.
31- 9-12e Greschaber, Crawford et al 1.
Sedgwick County—
34-26-1e Jadin, Wichita O. & G. 1.
Wells Drilling and Shut Down
(Shut Down Wells Indicated by *)
Barber County—
33-30-14w Hargiss, B. B. Brown 1.
Barton County—
27-18-12w Sooy, Cheyenne O. & G. 1*.
31-18-12w Taul, Haynes & Taul 1*.
22-18-13w Everleigh, Mountain States Oil 1.
17-19-11w Smith, Huffine et al 1.
Chase County—
19-19-8e Holsinger, Alters et al 1*.
19-21-5e Griffity, Security O. & G. 1*.
1-22-8e Irwin, Phillips Pet. 1.
Clark County—
20-32-21w Morrison, Watchorn O. & G. 1*.
Cloud County—
6- 6-4w Murdock, Livingston et al 1*.
Coffey County—
26-21-14e Davidson, Cross et al 1*.
9-21-16e Miller, Kelly Bros. 1*.
12-22-13e Beyer, Braden Bros 1*.
14-23-13e Elliott, Manhattan Oil 11*.
Decatur County—
25- 2-26w Reager, Marland Oil 1.
Ellis County—
16-11-17w Bemis, Sparks et al 1*.
14-12-16w Smith, James Davis et al 1*.
18-13-17w Polifke, J. Alan Harvey 1.
33-15-20w Murphy, Faler et al 1*.
Ellsworth County—
24-14-7w Walker, United Pet. 1*.
6-14-9w Kasper, John Herron et al 1*.
Finney County—
26-21-30w Wann, Garden City O. & G. 1*.
Geary County—
9-12-6e Wright, Liberty Texas Oil 1*.
30-13-6e Foster, Liberty Texas Oil 1*.
Graham County—
23- 8-24w Taxton, Keys Bros. & Marine 1*.
Hamilton County—
5-26-41w Ransom, Wood Oil 1.
Harvey County—
27-22-2e Symons, S. A. Hunter 1*.
5-23-1e Goertz, Union Oil 1*.
4-23-2e Masters, Derby Oil 1*.
Hawk, Derby Oil 1*.
11-24-2e Thompson, Shaffer O. & R. 1*.
Hodgeman County—
19-21-22w Frizzell, Spencer & Marconette 1.
Jefferson County—
13- 9-19e Edwards, Northern Counties Oil 1*.
Kingman County—
34-27-7w Graber, D. P. Fleeger et al 1.
Labette County—
14-31-17e Sparks, Ark. Fuel Oil 1*.
26-32-17e Wilks, Ark. River Gas 1*.
1-32-20e Turman, Noble Oil 1.
32-32-20e Burns, C. W. Willy et al 1*.
1-33-17e Hornback, T. R. Cowell et al 1*.
5-35-20e Lips, Wantland et al 1*.
Lincoln County—
19-11-6w Stone, Scott & Collins 1*.
22-11-6w Lewis, Pope & Powell 1*.
16-11-7w Crawford, Amerada Pet. 1*.
31-12-10w Lambert, Berry & Rosenthal 1*.
36-13-7w Paul, United Pet. 1*.
19-13-9w Jellison, Equity Oil 1.
McPherson County—
29-18-2w Anderson, Waugh & Casey 1*.
21-21-2w Thiesson, Ramona Oil 1.
21-20-2w Linn, Krown & Krown 1*.
Marion County—
31-20-4e Carpenter, Leeward Pet 1.
22-21-4e Equity Security, Morgan et al 1*.
8-22-4e Spier, John Markham 5.
Mitchell County—
23- 6-9w Elder, Wilcox O. & G. 1.
16- 5-8w Beeler, Alcorn Oil 1.
Morris County—
21-17-7e Weber, Bowman & Jones 1.
Nemaha County—
19- 3-11e Meyers, Nemaha O. & G. 1*.
Neosho County—
9-27-20e Haynes, Shaffer O. & R. 1.
Osborne County—
9-10-14w Bealby, Knight et al 1*.
Osage County—
2-15-16e Unknown, Baker et al 1*.
27-15-16e Baily, West et al 1*.
8-17-17e Neil est., Mull-Vit Dev. Co. 1*.
Phillips County—
28- 4-16w Hull, Frost Drlg. Co. 1.
12- 5-18w McKinley, Good & Craise 1*.
Pottawatomie County—
11-10-12e St. Mary's, Crawford et al 1*.
Reno County—
2-22-6w Sallee, Hipple & Childs et al 1*.
13-23-8w Short, Reno County O. & G. 1*.
28-25-6w O'Halloran, George Gano (trustee) 1.
5-26-4w Williams, M. M. Travis et al 1.
Rice County—
10-18-6w Walker, Jasper & Beschka 1*.
1-19-7w Deeds, Pryor & Lockhart 1*.
21-20-6w Barnes, Stamey et al 1.
26-20-6w Johnson, Midland Oil 1*.
18-21-10w Taylor, H. T. Proctor et al 1*.
Riley County—
14- 9-4e Woodbury, Empire G. & F. Co. 1.
26-10-8e Marks, Pawnee O. & G. 1*.
26-10-7e Thierer, Douglass & Youker 1.
Rooks County—
26- 6-17w Law, Marland Oil 1*.
7- 8-20w Saindon, Keys Pet. 1*.
Rush County—
10-18-16w Moore, Morgan & Downing 1*.
22-18-19-w Kirby, Raber et al 1*.
Saline County—
29-14-2w Davis, L. S. Johnson 1*.
26-15-2w Shelton, Brown & Woodward 1.
15-15-4w Holmquist, Thralls et al 1*.
Sedgwick County—
14-28-2e Landon, E. B. Merriam 1.
14-29-2w McMillen, Curtis & Frost 1*.
2-29-2e Fleming, Higgins 1.
29-29-2e Hunsaker, Hartman & Skaer & Johnson 1.
Seward County—
34-34-34w Wood, G. T. C. Dev. Co. & Defender Pet. 1*.
20-33-33w Sealey, Seward O. & G. 1*.
Stafford County—
29-21-11w Sifers, King & Langston 1*.
Trego County—
9-11-22w Kyser, A. D. Morton 1.
16-11-24w Davis, Keys Bros. & Marine 1.
6-11-25w Walsh, Keys Pet. 1*, 2*.
Wabaunsee County—
15-13-12e Hendrickson, Williams et al 1*.
Washington County—
9- 5- 5e Wickham, Barnes O. & G. 1*.
Rigs, 11; wells drilling, 96; total, 107.

EAST CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl
Limestone-							
Freestone	12	76,145	1	..	117	149	266
Navarro	18	660	9	..	3	18	21
Miscellaneous	..	.....	..	..	6	40	46
Total Dec.	30	76.805	10	..	126	207	333
Total Nov.	24	17,291	5	1	29	79	108
Difference	6	59,514	5	1	97	128	225

WELLS COMPLETED
WORTHAM FIELD

Freestone County—
Simmons, Boyd Oil 3 7300
Simmons, Boyd Oil 4 9000
Simmons, Mrs. J. K. Hughes 1 8000
Bounds, Kirby Petroleum 1 8845
Beall, E. L. Smith 1 5000
McCorkle, Penn & Atlantic O. P. 1....8500
Bounds, Pure Oil Co. 1 8000
Edwards, E. L. Smith 1 5000
Lindley, Strube & Strube 1 4000
Colome, Simms Oil Co. 1 8000
Bounds, Pure Oil Co. 2 5000
Stubbs, John Hoosier 1 ..... dry

Wells completed 12
Production 76145
Dry 1

NAVARRO COUNTY

Kent, Pure Oil 12 ..... abd
Ramsey, U. S. Tex Oil 4 30
Bounds, Brothers Oil 7 ..... dry
Swink, John Hoosier 3 65
Brown, John Hoosier 5 250
Davis, Peyton et al 1..... 90
Davis, Peyton et al 2 100
McKie, Pure Oil 65 ..... dry
Kent, Humble Oil & Refining Co. 2 ... 30
Kent, Texas-Magnolia 30 20
Holmes, LaRue & Smith 1 ..... dry
Goldman, Neeny & Smith 1 ..... dry
Keith, Tidal Oil 9 ..... dry
Elkins, Gulf Production 4 75
Elkins, Gulf Production 5 100
Milligan, Richardson & McAllister 1... dry
Edgar, Lenoir & Schafer 1 ..... dry
Bounds, Brothers Oil 7 ..... dry

Wells completed 18
Production 660
Dry 9

RIGS AND WELLS DRILLING
LIMESTONE-FREESTONE COUNTIES
Wortham Field—
Rigs
(* Indicates Rigs Up)
McClelland, Donald Brothers 1.
Simmons, Atlantic O. P. and Penn 1, 2.
Simmons, Boyd Oil Co. 2*, 7*, 8.
Simmons, Mrs. J. K. Hughes 5.
Crouch, Humble Oil & Refining 4-A.
Simmons, Humble Oil & Refining 4, 5*.
Watson, Kirby Petroleum 2.
Bounds, Pure Oil 5.
R. R. right of way, Rio Bravo Oil 6, 7, 15, 5*.
Beall, E. L. Smith et al 2*.
R. Simmons 15 acres, Simms Oil and Marland Oil 5-A, 6-A, 7-A.
R. Simmons, 6 acres, Simms Oil and Marland Oil 3-B.
Edwards, Atlantic O. P. 2*, 3, 4.
J. W. Bounds, Atlantic O. P. 1.
McCorkle, Atlantic O. P and Penn 4, 5.
Williams, Atlantic O. P. and Penn 2.
Jackson, Farish, Watts & Collins 4*.
McCorkle, Farish, Watts & Collins 2.
Hackney, L. P. Hammond 1.
Barclay & Meadows, Hinkle & Rowan 1.
E. D. Crouch, Humble Oil & Refining 5-A.
E. D. Crouch, Humble Oil & Refining 1-B, 2-B, 3-B.
R. Dodd, Humble Oil & Refining 4.
E. E. Edwards, Humble O. & R. 1*, 2.
H. B. Stubbs, Humble O. & R. 2*, 4.
Chancellor, Kirby Petroleum 4.
Childs, Kirby Petroleum 1*.
Easterling, Moss et al 1*.
Block 3, Division 5, Moss et al 1*.
Hurst 2 acres, Mills Bennett 1*.
B. Hurch, Oxford Oil 1*.
Jackson, Republic Production Co. 1*.
E. Simmons, Sun Oil Co. 4*, 5*, 6*.
Hackney, Simms Oil and Marland Oil 4.
McCorkle-Young, Tri-Way Oil 1, 3.
Berry, Walch et al 1*.
H. Seale, Boyd Oil 1.
Mrs. Manning, Boyd Oil 3.
Manning, Carter & Lytle 4*.
Manning, Boyd Oil 1.
W. E. Smith, Boyd Oil 2-A*, 3-A*, 1-B.
W. D. Wilson, 3-A, 4-A, 5-A, 6-A, 2-B, 3-B.
Mrs. Manning, Godley Oil 2*.
Lindley, Gulf Production 3*, 4 5.
Wilson, Gulf Production 2*, 3*, 4.
Lindley, Humble Oil & Refining, 3-A, 4-A, 5-A, 6-A, 2-B*, 3-B, 4-B.
Simmons, Humble Oil & Refining 3.
Mrs. J. J. Manning, Humble Oil & Refining, 1, 2, 3, 4, 5.
Beall, J. E. Hughes 1*.
J. J. Manning, Simms Oil Co. 3, 4, 5, 6.
Sealls, Skelly Oil 1*.
Limestone County—
Ferguson, Boyd Oil 11.
W. E. Smith, Boyd Oil Co. 2-B, 5-B, 6-B, 12-B, 13-B, 14-B*.
Wilson, Gulf Production Co. 1*.
Boyd, Magnolia Petroleum 14.
Boyd, Boyd Oil Co. 3*.
N. B. Boyd, Boyd Oil 3*, 4, 5.
Ferguson, Boyd Oil 7*, 8*.
Lindley, Boyd Oil 1.
Ferguson, Godley Oil 2.
Ferguson, Gulf Production Co. 4*.
Finch, Humble Oil & Refining 2*, 3.
Boyd, Magnolia Petroleum 2, 5*, 12*.
Bounds, Sun Oil Co. 1.

WORTHAM FIELD—FREESTONE COUNTY
Wells Drilling
Pickens, Kechi Petroleum 1.
Bounds, Patterson Lake Oil 1.
Simmons, Boyd Oil 5, 6, 7, 8.
Crouch, J. K. Hughes 1, 2.
Simmons, Mrs. J. K. Hughes 2, 3, 4.
Crouch, Humble Oil & Refining 1.
Crouch, Humble Oil & Refining 1-A, 2-A.
S. T. Bounds, Kirby Petroleum 2.
Watson, Kirby Petroleum 2, 3.
Simmons, Moss et al 1.
Simmons, Murchison & Fair 1.
Crouch, Pure Oil 1.
Bounds, Pure Oil 2, 3.
Guerner, Republic Production 1.
R. R. Right-of-Way, Rio Bravo 1, 2, 3, 4, 14.
Simmons, Simms and Marland 1-A, 2-A, 3-A, 4-A, 1-B, 2-B, 4-B.
Williams, Atlantic O. P. and Penn 1.
Edwards, Atlantic O. P. 1.
Hinchcliffe, Atlantic O. P. 1, 2.
McCorkle, Atlantic O. P. and Penn 2.
Martin, Cranfill & Reynolds 1.
Cashion, Cranfill & Reynolds 1.
Edwards, Carter & Lytle 1.
Jackson, Farish, Watts & Collins 1, 2, 3.
Townsite, Farish, Watts & Collins 1.
McCorkle, Farish Watts & Collins 1.
Block 1, Di. 13, G. Hammond et al 1.
Quinby, Block 77, Gulf Production 1.
Simmons, Gulf Production 1, 2.
Block 78, Hopgood et al 1.
Davis, Humble Oil & Refining 1.
Simmons, Humble Oil & Refining 1.
Poindexter, Humble Oil & Refining 1, 2.
Poindexter, Humble O. & R. 1, 2, 3, 4.
Crouch, Humble Oil & Refining 2-A.
Dodd, Humble Oil & Refining 1, 2, 3.
Stubbs, Humble Oil & Refining 1.
Crouch, J. K. Hughes 3, 4, 5, 6, 7.
Chancellor, Kirby Petroleum 1, 2, 3.
Wright, Kirby Petroleum 1, 2.
Patterson, Ray et al 1.
Colome, Simms Oil 1, 2, 3, 4.
Colome, Marland and Simms 1-A, 2-A.
Allmond, Love and others 1.
Phillips, Oxford Oil 1.
Morrow, Oxford Oil 1.
Edwards, Smith et al 1.
A. H. Edwards, E. L. Smith et al 2.
Simmons, Sun Oil 1, 2, 3.
Longbotham, Southern Exploration Co. 1.
Wright, Southern Exploration 1, 2.
Hackney, Simms and Marland 1, 2, 3.
Edwards, Tri- Way Oil 1.
McCorkle-Young, Tri Way Oil 1.
Manning, Carter and Lytle 2, 3.
Manning, Boyd Oil 2.
Smith, Boyd Oil 1-A, 2-B, 4-B, 2-A.
Wilson, Boyd Oil 1-A, 2-A, 3-A, 4-A, 1-B, 3-B
Young, Boyd Oil 1.
Manning, Godley Oil 1.
Lindley, Gulf Production 1.
Lindley, Gulf Production 2.
Ferguson, Humble Oil & Refining 1.
Lindley, Humble O. & R. 1-A, 1-B.
Manning, Mutual Oil 1.
Manning, Mutual Oil 2.
B. Simmons, Owenwood Oil 1.
Seals, Ray & Massie 1, 2.
J. J. Manning, Simms Oil 1, 2.
Seals, Skelly Oil 1.
Lindley, Stroube & Stroube 1.
Smith, Wheelock & Collins 1.
Limestone County—
Wilson, Boyd Oil 1-B, 3-B.
Ferguson, Boyd Oil 1, 3, 2, 4, 5, 6.
Ferguson, Godley Oil 1.
Ferguson, Gulf Production 1, 2, 3.
Finch, Humble Oil & Refining 1.
Boyd, Magnolia Pet. 1, 7, 8, 9, 10, 11, 13
Cook, Mexia Giant Oil 1 (s.d.)
Speight, Gardner et al 1.
Webster, Pure Oil 1.
Rigs, 117; wells drilling 149; total, 266.

NAVARRO COUNTY
Howell, Simms Oil 1.
Boyd, Williams & Pyle 1.
Goffey, Garland Kent 1.
Wells Drilling and Shut Down
(Shut down wells indicated by *.)
Webb, Boyd Oil 9.
Allison, Simms Oil 6.
Gordon, Simms Oil 2*.
Swink, Sun Oil 1.
Kent, Pure Oil 9.
McCormack, Bankers Trust 1*.
Williamson, Andrews Petroleum 2
Harvard, Bridwell & Gray 4*.
Quimby, Moore Brothers 1.
English, Pure Oil 5.
Morrow, J. K. Hughes Oil 4.
Roberts, Patrick et al 1*.
Pillin, Ashley Brothers 1.
Greer, Powell Petroleum 1.
Westbrook, Elliott & Nicholle 1.
Chapman, McMan Oil 8.
Barry, Garland Kent 2.
Kent, Humble Oil & Refining 1.
Rigs, 3; wells drilling, 18; total, 21.

MISCELLANEOUS
Rigs
Anderson County—
Turner, Hughes et al 1.
Cass County—
Speers, Bankers Trust Co. 1.
Caster, Gibbs Petroleum 1.
Hopkins County—
Davis, Gulf Production Co. 1.
Hunt County—
Barnett, Tullal & Kelsey 1.
Van Zandt County—
Greer, Marland Oil Co. 1.
Wells Drilling and Shut Down
(Shut Down Wells Indicated by *)
Anderson County—
Parker, J. E. Williams et al 1*.
Brooks & Auldt, Rosser et al 1*.
Morning Plant, Palestine Oil & Gas 1*.
Bowie County—
Parker, Dalby Springs Oil 1*.
Rochelle, Delaney Oil Co. 1*.
LeForte, Mook Oil & Gas 2*.
Taylor, Tristate Oil 1*.
Cass County—
Evans, Caldwell et al 1*.
Cherokee County—
Clapp, Collington Drilling Co. 1.
Delta County—
Patrick, J. E. McNeill 1*.
Franklin County—
Harper, J. E. McNeill 1*.
Falls County—
DeGraffenreid, Myrin et al 1.
Penny, Edward Falsey 1*.
Preston, C. W. Harrison et al 1*.
Peacock, High Banks Oil 1*.
Henderson County—
Bounds, F. Haynes 1*.
Eade, Richardson Brothers 1*.
Hopkins County—
Enix, The Texas Co. 1*.
Brooks, Kelsey et al 1*.
Kaufman County—
Kirby, Germany et al 1*.
Barrow, Skinner & Lyles 1*.
Leon County—
Carrington, Mexia Marquest Oil 1*.
Milam County—
Smith, Sinclair Oil & Gas 1.
Letters, E. C. Nelson 1*.
Ashley, Beverly Oil 1*.
Buer, Beverly Oil 1.
Bremond, Mills Bennett 1*.
Hollison, Garland Fallis 1.
Raines County—
Dowell, McLaughlin & Lyles 1*.
Red River County—
Dinviddie, Brewer Rines 1*.
Simmons, Clarksville Texas Co. 1*.
Arnold, Isabell Givens 1, 1*.
Antone, Johnson Petroleum 1*.
Wortham, O'Bannon Brothers 1*.
Garland, Higgins Oil & Gas 1*.
Robertson County—
Wilkerson, J. C. Bland et al 1*.
Titus County—
Antone, Magnolia Pet. 1.
Van Zandt County—
Jones, Mexia Drilling Co. 1*.
Dunbar, Terrell Oil 1*.
Wood County—
Senter, The Texas Co. 1*.
Rigs, 6; wells drilling, 40; total, 46.

NORTH CENTRAL TEXAS

Summary of Wells Completed

District—	Comp.	Prod.	Dry	Gas
Wichita	32	1,103	14	0
Archer County	117	17,675	36	0
Young	13	590	6	0
Stephens	10	315	4	0
Eastland	11	330	2	1
Wildcats	40	10,505	22	3
Total December	223	30,518	84	4
Total November	205	22,584	82	9
Difference	18	7,934	2	5

Summary of Rigs and Wells Drilling

District—	Rigs	Drg.	Ttl.
Wichita	10	23	33
Archer	5	84	89
Young	6	30	36
Stephens	8	34	42
Eastland	4	22	26
Wildcats	25	106	131
Total December	58	299	357
Total November	60	315	375
Difference	2	16	18

WICHITA COUNTY
WELLS COMPLETED
Borgfeldt, Donovan and others 1..... dry
Rio Bravo, Magnolia Pet. Co. 29..... 60
Allen & Kemp, O'Donohoe et al 3..... 60
Burnett, Texhoma et al 1-B..... 80
Burnett, Texhoma O. & R. Co. 11-B.. 110
Watkins, Underwood et al 1..... 55
Rathgeber, Clopton et al 1..... dry
Kemp, Kentucky Oil Corp. 3..... dry
Sisk, Shappell Oil Co. 1..... dry
Chilson, Stump Oil Co. 1..... dry
Fisher, Barr et al 1..... dry
McCarty, Hammon et al 1..... dry
Waggoner Bros., Hammond et al 1.... dry
Kruger, Allen & Kemp 8..... 48
Abernathy, Magnolia Pet. Co. 8..... dry
Burnett, Perkins et al 10..... 95
Nance, Ryan Pet. Co. 26..... 74
Burnett, Texhoma & Perkins 1-B..... 60
Burnett, Texhoma O. & R. Co. 3-C..... dry
Honaker, Magnolia Pet. Co. 66..... 10
Allen & Kemp, Moore et al 2..... dry
McClure, Rubson et al 3..... 25
Waggoner, The Texas Co. 29C..... 15
Burnett, Texhoma O. & R. Co. et al 5-A 140
Burnett, Texhoma O. & R. Co. 12-B.... 105
Jennings, United Prod. Co. 4..... 16
Hensen, Brewer et al 1..... dry
Douglas, Drillers Dev. Co. 5..... 10
Grace Jennings, Elliott et al 2..... dry
Hensen, L. J. K. Oil Co. 1..... dry
Lover, Parker Bros. 1..... 15
Burnett, Perkins et al 11..... 125

Wells completed..... 32
Production 1193
Dry 14
Gas 0

ARCHER COUNTY
Parrish, Atlantic O. Co. 5..... 225
Pease, Humble O. & R. Co. 2..... dry
Wilson, McCarty O. Co. 4-B..... 80
Wilson, Riner et al 13-B..... 70
White, Boerton et al 11..... 145
Wilson, Texhoma O. & R. Co. 3-C..... 75
Wilson, Woodburn O. Corp. 12-A..... 70
Bridwell, Carey Drilling Co. 2..... 500
Beardon, Consolidated O. Co. 4..... 25
Davis, Consolidated Oil Co. 4-A..... 300
Farmer, Gwynn et al 1..... dry
Ragle, Humble O. & R. Co. 1..... 25
Bridwell, Maer et al 2..... 460
Neal, Maer et al 1..... dry
Goldsmith, Meiat et al 4..... 125
Goldsmith, Meiat et al 5..... 75
Harmel, Murchison et al 3..... 300
Harmel, Murchison et al 1-C..... 320
Wood, Murchison et al 1..... dry
Kunkel, Muse et al 1..... dry
Rogers, Producers Pet. Co. 2..... 230
Hausler, Ray et al 1.....1395
Hausler, Ray et al 2.....1200
Campbell, Shamrock O. Co. 7..... 100
Richardson, Shamrock O. Co. 13-B..... 65
Goldsmith, Shamrock O. Co. 18..... 125

Hausler, Texhoma O. & R. Co. 3..... 400
Hausler, Texhoma O. & R. Co. 4.....1200
Bearden, Lee Wilson et al 4..... 200
Coleman, Beaudoin et al 1..... dry
White, Carter et al 11-E..... 135
White, Carter et al 12-E..... 145
Cowan, Fletcher Synd. 1..... dry
Miller, Fuller et al 3..... 15
Wilson, Humble O. & R. Co. 1..... dry
Wilson, Humble O. & R. Co. 1-B..... dry
Wilson, Humphries et al 10..... 385
White, Lane et al 3..... 60
Oil Investment Co., Lincoln et al 1100
Parish, Magnolia Pet. Co. 6..... 60
White, Robertson et al 3..... 100
White, Robertson et al 10..... 165
Campbell, Barbee et al 1..... dry
Norred, Bridwell et al 1..... dry
Ragle, Consolidated Oil Co. 6-B..... 150
Ragle, Consolidated Oil Co. 4-E..... 250
Kunkel, Davis-Hart Co. 1..... dry
Rogers, Green et al 1..... dry
Davis, Grisham et al 3..... 350
Taber, Mitcham et al 1..... dry
Holcock, Nebraska-Texas Co. 1..... dry
Rogers, Petroleum Producers Co. 3.... 250
Farmer, Tucker et al 1..... dry
White, Carter et al 13-E..... 130
White, Carter et al 1-F..... dry
Parrish, Magnolia Pet. Co. 7..... 75
Fee, Oil Investment Co. 1..... 40
White, Robertson et al 12..... 190
White, Robertson et al 13..... 175
White, Robertson et al 21..... 60
Farmer, Archer Oil Corp. 1..... 15
Bearden, Consolidated Oil Co. 5..... 150
Davis, Consolidated Oil Co. 5-A..... 160
Ragle, Consolidated Oil Co. 3-E..... 250
Bridwell, Cullum et al 3..... 240
Rogers, Gwynn et al 1..... 240
Young, Goldsmith et al 1..... dry
Russell, Hobb et al 1..... dry
Bridwell, Maer et al 3..... 140
Griffin, Murchison et al 2..... 125
Griffin, Murchison et al 4..... 120
Harmel, Mutual Oil Co. 1..... 250
Bridwell, Producers Pet. Co. 1..... 350
Rogers, Producers Pet. Co. 4..... 250
Hausler, Ray et al 4..... 250
Farmer, Simms Oil Co. 1..... dry
Hausler, Texhoma O. & R. Co. 5..... 200
Hausler, Texhoma O. & R. Co. 7..... 300
Bearden, Wilson et al 3..... dry
Bearden, Wilson et al 5..... dry
Bearden, Wilson et al 6..... 360
Hughes, Anderson et al 2..... dry
Wilson, Barkley et al 5..... dry
Parrish, Franklin et al 1-B..... 95
White, Humphries et al 11..... 180
White, Lane et al 4..... 45
K. & K., Long et al 1..... dry
Parrish, Magnolia Pet. Co. 8..... 125
Fee, Oil Investment Co. 2..... 140
White, Robertson et al 5..... 250
Ragle, Consolidated Oil Co. 2-E..... 300
Bridwell, Cullum et al 4..... dry
Rogers, Gwynn et al 2..... 200
Davis, Graham et al 4..... 200
Hausler, Hardesty et al 1..... dry
Kunkel, Harvey et al 1..... dry
Hausler, Humble O. & R. Co. 1..... dry
Ragle, Humble O. & R. Co. 2..... 25
Bridwell, Maer et al 4..... dry
Bridwell, Maer et al 5..... 100
Robertson, Magnolia Pet. Co. 1..... dry
Goldsmith, Melat et al 4..... 100
Fallis County School Land, McJunkin et al 1..... dry
Harmel, Murchison et al 2-A..... 280
Harmel, Murchison et al 3-C..... 140
Griffin, Murchison et al 3..... 160
Griffin, Murchison et al 5..... dry
Bridwell, Petroleum Prod. Co. 2..... 400
Hausler, Ray et al 3..... 250
Hausler, Ray et al 5..... 300
Logan, Saunders et al 3..... dry
Green, Saunders et al 2..... 225
Jeske, The Texas Co. 2..... dry
Hausler, Texhoma O. & R. Co. 6..... dry
Hausler, Texhoma O. & R. Co. 7..... dry
Rogers, Underwood Drlg. Co. 2..... 55
Griffin, Wollett et al 1..... 140

Wells completed 117
Production 17673
Dry 38
Gas 0

YOUNG COUNTY

Lewis, Burton et al 1..... dry
Campbell, Litchfield et al 1..... 75
Williams, Nash et al 1-B..... dry
Willis, Sims et al 1..... 75
Stovall, Stovall et al 2..... 50
Alexander, Burns et al 1..... dry
Campbell, Litchfield et al 1..... 65
Hill, Harvey et al 1..... dry
Tang, Texas Central Oil Co. 1..... dry
Johnson, Herbert Drg. Co. 1..... dry
Johnson, McGarr et al 1..... 150
Campbell, Reed et al 1..... dry
Willis, Sims Oil Co. 1..... 175

Wells completed 13
Dry 6
Production 590
Gas 0

STEPHENS COUNTY

Rogers, Texas Pacific C. & O. Co. 5.... dry
First Nat. Bank, Walker et al 5..... 200
McClure, Texas Fidelity O. Co. 1..... 10
Martin, Ivan Pet. Co. 2..... dry
Sorgee, Sindorf Bros. 2..... 20
Humphreys, Christie Bros. 4..... 25
O'Laughlin, Humble O. & R. Co. 1..... dry
Webb, Hoffer Oil Corp. 1..... dry
Echols, Swensondale Oil Co. 1..... 10
Head, Mook Texas Oil Co. 2..... 50

Wells completed 10
Production 315
Dry 4
Gas 0

EASTLAND COUNTY

Brashear, Dixie Co. 1..... 60
Shugart, Kirk et al 5..... 40
Harrell, Mid-Kansas O. & G. Co. 6 Acct. 2 ..... dry
Ford, Pittman et al 2..... 10
McMinn, Pittman et al 1..... 35
Scott, Teatsworth et al 1..... 10
Gooch, Keough Bros. 10..... 35
Judd, Mexia Star Oil Co. 1..... gas
Harris, Magnolia Pet. Co. 6..... 130
Fox, Williamson et al 4..... 10
Huestes, Beeler et al 1..... dry

Wells completed 11
Production 330
Dry 2
Gas 1
Gas production.....1,500,000

WILDCATS

WELLS COMPLETED

Wilbarger County—
Bond, Ray et al 1.....1895
Dill, Ray et al 1..... dry
Bond, Winnipeg Oil Co. 1.....1165
Bond, Winn.peg Oil Co 2.....1500
Dill, Bridwell et al 1..... 430
Stephens, Bridwell et al 4..... 900
Zipperle, Prince Bros. 1..... dry
Waggoner, Wells et al 1..... 665
Bond, Winnipeg Oil Co. 3..... 400

Baylor County—
Hawkins, Crittenden et al 1..... dry

Throckmorton County—
Polk County, Adams et al 1..... dry
McKnight, Shamrock Oil Co. 1.....dry
McKnight, Haugblood et al 1..... dry
Richards, Larkin et al 1..... gas

Shackelford County—
Lynch, McMahon et al 2..... dry

Callahan County—
Moore, Dudley O. & G. Co. 1..... 15
White, Prewitt et al 1..... dry
Bailey, Prewitt et al 1..... dry
Windham, Prewitt et al 1..... gas
Betcher, Prewitt et al 1..... gas
Cathey, Blair et al 5..... dry

Reeves County—
Casey, Rodenbough et al 1..... dry
Johnson, Pico Pet. Co. 1..... dry
Pecos Valley Synd., Texas Drg. & Dev. Co. 1..... dry
Horshenson, Tray et al 1..... dry
Cowen, Willoughby Pet. Co. 1..... dry

Carson County—
Burnett, The Texas Co. 4..... 60

Borden County—
Long, Reeves et al 1..... dry

Brown County—
Cox, Gully et al 1..... 15
Teston, Moore et al 1..... 40
Gunn, Stone et al 1..... 10

Comanche County—
McKeehan, Fain et al 1..... 60

Reagan County—
University, Big Lake Oil Co. 13.....3350

Ward County—
Longnecker, Trans Pecos O. Co. 1..... dry

Montague County—
Howard, Mascho Oil Co. 1..... dry
Cato, Texhoma O. & R. Co. 1..... dry

Crockett County—
Harris, Mid-Kansas O. Co. 1..... dry

Palo Pinto County—
Moseley, Broderick et al 1..... dry
Slimp, Talbert et al 1..... dry
Bigler, Dittman et al 1..... gas

Wells completed 40
Production 10505
Dry 22
Gas 3
Gas production.....7,000,000

WICHITA COUNTY

Rigs

Rielly, Magnolia Pet. Co. 110, 111.
Rielly, White et al 1.
Abernathy, Magnolia Pet. Co. 9.
Waggoner, Magnolia Pet. Co. 9-A, 10-A.
Allen & Kemp, O'Donohoe et al 4.
Burnett, Perkins et al 12.
Ancell, Salmon et al 1.
Burnett, Section 2 Oil Co. 5.

Wells Drilling

Smith, Couch et al 1.
Reilly, Magnolia Pet. Co. 108, 109.
Beach, Magnolia Pet. Co. 41.
Donegby, O'Neil et al 1.
Roller, The Ascot Co. 26.
K. & K. Bailey et al 1.
Margold, Bain et al 2.
Burnett, Burnett Ranch Oil Co. 9.
Douglas, Drillers Dev. Co. 6.
Pierce, Empire G. & F. Co. 6.
Ferguson, Hughes et al 1.
Douglas, Magnolia Pet. Co. 11.
Honaker, Magnolia Pet. Co. 66.
McMan, Magnolia Pet. Co. 8.
Rio Bravo, Magnolia Pet. Co. 40, 41.
Pure Waggoner, Magnolia Pet. Co. 4.
Waggoner, Magnolia Pet. Co. 3-A.
Waggoner, Magnolia Pet. Co. 4-B.
Woodard, O'Neil et al 1.
Nance, Ryan Pet. Co. 24-A.
Ward & Todd, Trimantual O. & G. Co. 7.
Rigs, 10; wells drilling, 22; total, 33.

ARCHER COUNTY

Dale, Beaudoin et al 2.
Bernado, Cumac Oil Co. 1.
White, Humphries et al 7.
Nichols, Pace et al 1.
Wilson, Verschuyle et al 8-B.

Wells Drilling

K. & K., Staley et al 4.
Hughes, Camp O. & G. Co. 1.
White, Carter et al 3-C, 15-E.
White, Comet Pet. Co. 3.
Andrews, Electra Gas Co. 1.
Pearston, Forest et al 1.
Parrish, Franklin et al 2-B.
Wilson, Gohlke et al 1.
White, Humphries et al 9, 12.
Oil Investment Co., Lincoln et al 2
Langford, Lincoln et al 1.
Parrish, Magnolia Pet. Co. 9, 11.
Hutcherson, Mahlstedt et al 1.
Wilson, McCarty Oil Co. 5-B.
White, Murchison et al 8.
Fee, Oil Inv. Co. 4.
Wilson, Phillips et al 4.
Wilson, Ramming et al 5.
Edwards, Rayzor et al 1.
Wilson, Riner et al 3-A.
White, Robertson et al 6, 15, 16.
Parrish, Sims Oil Co. 4.
Wilson, Texhoma O. & R. Co. 1.
Wilson, Woodburn Oil Co. 15-A.
Giddings, Bridwell et al 1.
Kunkle, Burns et al 1.
Harris, Clopton et al 1.
Anderson, Cochran et al 1.
Lane, Hobbs Bros. 1.
Harison, Maxwell et al 1.
Justice, McNamara Bros. 1.
Farmer, Sun Oil Co. 6.
Hayter, Christie et al 1.
Bearden, Consolidated Oil Co. 6.
Davis, Consolidated Oil Co. 6-A.
Ragle, Consolidated Oil Co. 7-B.
Ragle, Consolidated Oil Co. 4-C
Bridwell, Cullum et al 5.
Turbeville, Duke et al 1.
Rogers, Fisher et al 1.
Rogers, Gwynn et al 1, 3, 4.
Woods, Gwynn et al 2.
Davis, Grisham et al 5.
Hayter, Humble O. & R. Co. 1.
Stampfli, Humble C. & R. Co. 1.
Wood, Humble O. & R. Co. 1.
Norton, Lyles et al 1.
Goldsmith, Melat et al 2.
Harmel, Murchison et al 2-B, 2-C, 4-C.
Griffin, Murchison et al 6, 7, 8.
Wood, Murchison et al 2, 3.
Harmel, Mutual Oil Co. 2, 3.
Prideaux, Nicholson et al 1.
Rogers, Pet. Prod. Co. 5, 6.
Hausler, Ray et al 5, 7, 8.
Kunkel, Roxana Pet. Co. 1.
Morrison, Scruggs et al 1.
Hayter, Shaw et al 1.
Green, Sun Oil Co. 4.
Kelley, Staley et al 1.
Ward, Stump O. & G. Co. 1.
Neal, Swastika Oil Co. 2.
Jeske, The Texas Co. 3.
Hausler, Texhoma O. & R. Co. 9, 10.
Griffin, Williott et al 1, 2.
Campbell, Young et al 1.
Rigs, 5; wells drilling, 84; total, 89.

YOUNG COUNTY

Rigs

Roach, Carey Drilling Co. 1.
Marshall, Jones et al 1.
Loran, O'Neal et al 1.
Clark, O'Neal et al 1.
Reed, Clark et al 1.
Wells, Wurtz et al 1.

Wells Drilling

Zimmerman, Applegate et al 1.
Vernon, Brian et al 1.
Campbell, Burton et al 1.
Davis, Camp O. & G. Co. 1.
Harrison, Cheney et al 1.
McLaren, Christie Bros. 3.
Bearden, Consolidated Oil Co. 1.
Keith, Daniels et al 1.
Craig, Dunn et al 1.
Andrews, Harris et al 1.
Heatherly, Heatherly et al 1.
Jeffrey, Jones et al 1.
Marshall, Keener O. & G. Co. 1.
Kilcrease, Kentucky Oil Corp. 1.
Calley, Knight et al 1.
Logan, Knight et al 1.
Jeffrey, Knight et al 1.
Fringle, Knight et al 1.
Campbell, Litchfield et al 2.
Sckert, Mooers et al 1.
Campbell, Murchison et al 1.
Gambrell, Murchison et al 1.
Kemp, Olney Prod. Co. 1.
Bernhardt, Pace et al 1.
Dietrich, Pois et al 1.
Thomas, Staley et al 1.
Carpenter, Sims Oil Co. 1.
Eatley, Union Oil Co. 1.
Daws, Vance et al 1.
Wainscott, Verschoyle et al 1.
Rigs, 6; wells drilling, 30; total, 36.

STEPHENS COUNTY

Rigs

Cobb, Critten et al 4.
Cunningham, Critten et al 4.
Haliburton, McLain et al 1.
Lowe, Mid-Kansas O. & G. Co. 3, Acct. 2.
First Natl. Bank, Walker et al 3.
Brown, Welsh et al 2.
Polan, Carter et al 1.
Hard, Texas Pacific C. & O. Co. 2 Acct. 2.

Wells Drilling

Bascom, A. B. Oil Ass'n. 1.
Cobb, Britten et al 8.
Lane, Interstate Consolidated Co. 1.
Hill, Mid-Kansas O. & G. Co. 15, 3 Acct. 2.
Lowe, Mid-Kansas O. & G. Co. 5, Acct. 2.
Tullos, Mid-Kansas O. & G. Co. 11, Acct. 1.
Williams, Mid-Kansas O. & G. Co. 2, Acct. 2.
Keel, Pender Prod. Co. 3.
Crudington, Pierce et al 1.
Atkins, Prairie O. & G. Co. 15.
Caldwell, Prairie O. & G. Co. 2.
Ackers, Snowden & McSweeney 8.
Higginbotham, Snowden & McSweeney 5.
Martin, Texas Consolidated Oil Co. 6.
Bradford, Adamson et al 2.
Walker, Buckeye Dev. Co. 8.
Fust, Clark et al 1.
Simmons, Cobb et al 1.
McCluskey, Fuuts et al 1.
Fleming, Knox et al 1.
Wood, Landreth Prod. Co. 1.
Brown, Lewis Oil Co. 1.
C. B. Brown, Magnolia Pet. Co. 3.
J. W. Brown, Magnolia Pet. Co. 7, 8.
McCauley, Magnolia Pet. Co. 5.
Bruce, Price et al 6.
Watson, Schimmel et al 1.
Curry, Scott et al 1.
Boles, States Oil Co. 1.
Stoker, Sun Oil Co. 6.
Curry, The Texas Co. 10.
Veale, Texas Pacific C. & O. Co. 1.
Adams, Triplehorn Pet. Co. 1.
Rigs, 8; wells drilling, 34; total, 42.

EASTLAND COUNTY

Rigs

Davenport, States Oil Co. 2.
Harrell, States Oil Co. 14.
Lamb, Kimmell et al 1.
Halton, Weaver Oil Co. 1.

Wells Drilling

Elliott, Dorothy Oil Co. 1.
Norton, Dyer Bros. 1.
Miller, Eby et al 1.
Goodwin, Gallagher et al 1.
Barnes, Magnolia Pet. Co. 7.
Rogers, Magnolia Pet. Co. 4.
Scott, Parsons et al 1.
Pettit, Pittman et al 1.
Bone, Reclamation Oil Co. 6.
Wheeler, Root et al 1.
Quiett, States Oil Co. 8.
Stanton, Burkett et al 1.
Hazel, Eastland Oil Co. 1.
Jordan, Eastland Oil Co. 2.
White, Knox-Lewis 1.
Qualls, Lorenzen et al 1.
Storm, McMeans et al 1.
McClelland, Riley et al 1.
Brunet, Rosenfield et al 1.
Ammerman, Root et al 1.
Hart, Root et al 1.
Dulin, Weaver Oil Co. 1.
Rigs, 4; wells drilling, 22; total, 26.

WILDCATS

Wells Drilling

Hutchinson County—
Smith, Dixon Creek Oil Co. 1.
Whittenburg, Douglas Oil Co. 1.
Bivens, Amarillo Oil Co. 2-B.
Shaw, Prairie Oil & Gas Co. 1.
Kingsland, Twin Six Oil Co. 1.
Whittenburg, Wilson et al 1.

Wells Drilling

Carson County—
Burnett, American Ref. Co. 3.
Burnett, Crosby Oil Co. 1.
Armstrong, Culbertson Bros. 1.
Burnett, Gates Oil Co. 1.
Burnett, Marland Oil Co. 1.
Burnett, Olson Bros. 1.
Burnett, Silk et al 3-A.
Burnett, Skelly Oil Co. 2.

Rigs

Gray County—
Bowers, Danciger O. & R. Co. 1.

Wells Drilling

Combs & Worley, Clark et al 1.
Morse, Holmes et al 2.

Rigs

Wilbarger County—
Waggoner, American Ref. Co. 1.
Waggoner, Humble O. & R. Co. 1.
Waggoner, Kolp et al 2.
Stephens, McCamey et al 2.
Stephens, South Vernon Oil Co. 10.
Stephens, Staley et al 1.
Castlebury, The Texas Co. 1.
Bond, Waggoner et al 2.
Streit, Wood et al 1.

Wells Drilling

Stephens, Barkley et al 1.
Stephens, Bridwell et al 5.
Waggoner, Bridwell et al 1.
Bond, Electra Gulf Oil Co. 1.
Kesster, Hamilton et al 1.
Castlebury, Humble O. & R. Co. 1.
Waggoner, Kolp et al 1.
Waggoner, Levy et al 1.
Youngblood, Little Oil Co. 1.
H. & T. C., Magnolia Pet. Co. 66.
Sumner, Magnolia Pet. Co. 46.
Richardson, McCamey et al 1.
Stephens, McCamey et al 1.
Waggoner, Mullgan et al 1.
Bowers, Oklahoma Texas Ref. Co. 1.
Waggoner, Oxford Oil Co. 1.
Dill, Petroleum Prod. Co. 2.
Bond, Ray et al 2, 3, 4.
Streit, Skinner et al 1.
Stephens, South Vernon Oil Co. 4, 5, 6, 7, 8, 9, 11.
Waggoner, Staley et al 1.
Sheldon, Tippit et al 1.
Bond, Waggoner et al 1.
Bond, Winnipeg Oil Co. 4.

Wells Drilling

Cottle County—
Dulaney, Woodley et al 1.

Wells Drilling

Clay County—
Culver, Evans et al 1.
Scott, Knox et al 4.
Scott, Sullivan et al 2.
Parker, Somers et al 1.

Wells Drilling

Montague County—
Salmon, Boyd Oil Co. 1.
Jordan, Guaranty Fund Oil Co. 1.
Salmon, Lesh et al 1.
Howard, Pet. Prod. Co. 1.
Gist, The Texas Co. 2-A.

Rigs

Collin County—
Walters, Kyle et al 1-A.

Rigs

Throckmorton County—
Travis County, McNeil et al 1.

Wells Drilling

McCarson, Clark et al 1.
Odell, Hamilton et al 1.
Conger, Larkin et al 1.
Richards, Larkin et al 2.
Davis, McNeil et al 1.

Rigs

Shackelford County—
Poindexter, Landreth Prod. Co. 13, 15.

Wells Drilling

Green, Humble O. & R. Co. 1.
George, Magnolia Pet. Co. 4.

Wells Drilling

Palo Pinto County—
Smith, Singleton et al 1.
Bilding, Hughes et al 1.
Weldon, Hughes et al 2.
Strawn Coal Co., Brittan et al 3.
Pollard, Cameron Oil Co. 2.
Stuart, Moore et al 2.
Simmons, Pender Prod. Co. 2.
Williams, Whitacre et al 1.

Rigs

Callahan County
Cathey, Dutton et al 5, 7.
Finley, Hickey et al 2.
Cathey, O'Donnell et al 1.

Wells Drilling

Snyder, Kellogg Drilling Co. 1.
Bryson, Pope et al 4.
G. F. Crane, Prewitt et al 1, 2.
Isbenhower, Seaboard O. & G. Co. 3-4.

Rigs

Mitchell County—
Keynard, Daniel et al 1.

Wells Drilling

Gist, Eddleman et al 1.
Clark, California Co. 1.
Miller, California Co. 5.
Abrams, California Co. 7.
Keynard, Morrison et al 1.
Miller, Sloan et al 3.

Wells Drilling

Brown County—
Ellsbury, Canyon O. & G. Co. 1.
Prather, New Era Oil Co. 3.
Chambers, Slick et al 1.
Gunn, Stone et al 2.
Windham, Ward Oil Co. 1.

Rigs

Comanche County—
Goss, Mon-Tex Oil Co. 1.

Wells Drilling

Sturkie, Cox et al 1.

Rigs

Reagan County—
University, Hughes Dev. Co. 1.
University, Stover et al 1.
University, Texon Co. 4, Group 2.

Wells Drilling

University, Arkansas Fuel Oil Co. 1.
University, Big Lake Oil Co. 14, 15.
University, Brandon et al 1.
University, California Co. 1.
University, Grayson Oil Co. 1.
University, Mid-Kansas Oil & Gas Co. 1.
University, Texon Land & Dev. Co. 1, Acct. 2, 2 Acct. 1, 3 Acct. 1.
University, Transcontinental Oil Co. 1.

University, University Oil Co. 1.

Rigs

Pecos County—
Townsite, Quinby et al 1.
Perry, Plymouth Oil Co. 1.

Wells Drilling

Blackstone, Arkansas Fuel Oil Co. 1.
Sherbino, Transcontinental Oil Co. 1.

Wells Drilling

Val Verde County—
Harrison, Hodges et al 1.
Moore, Rio Bravo Oil Co. 1.
Rigs, 25; well drilling, 106; total, 131.

N. LOUISIANA-ARKANSAS

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Union County	35	1,700	14	0	21	37	58
Ouachita Co..	30	2,637	3	0	26	40	66
Stephens	3	0	3	0	0	2	2
Nevada	0	0	0	0	1	0	1
Bellevue	1	20	0	0	0	2	2
Caddo	2	35	1	0	1	7	8
Cotton Valley	9	2,150	0	2	18	36	54
La. wildcats.	28	15	11	16	11	55	66
Ark. wildcats	5	0	5	0	7	31	38
Total Dec...	114	6,557	36	18	85	210	295
Total Nov...	71	17,159	19	17	74	212	286
Total	43	10,602	17	1	11	2	9

UNION COUNTY, ARKANSAS

WELLS COMPLETED

4-16-15 Galloway, Amerada Pet. Co. 1 dry
12-16-17 Patterson, Arkansas Inv. O. Co. 1 70
21-16-15 Clark, Baggott et al 1..... 100
1-16-17 Neely, Clark, H. E. 2..... 30
14-16-16 Thornton, Lerker Dig. Co. 1.. dry
1-16-17 Freeman, Estes et al 3..... dry
1-16-17 Freeman, Estes et al 4..... 45
25-16-16 Burton, Freeman et al 1..... dry
6-16-16 Hodges, Gilliland, W. H. A-1.. 75
7-16-15 Thompson, Gladys Belle Oil Co. 1 70
2-16-15 M. Alphin, Gulf Refining Co. 9 150
5-16-16 H. Murphy, Gulf Refining Co. 1 30
5-16-16 L. Werner, Gulf Ref. Co. 25.. 85
6-16-16 L. Werner, Gulf Ref. Co. 26.. 60
11-13-12 Teele, Harrel et al 1..... dry
14-16-15 Murphy, Higgins Oil & Fuel Co. A-4 75
29-17-14 Smith, Imperial Oil Co. 3..... 180
17-17-15 Ford, Johnson, J. D., trustee dry
3-16-15 Williams, Kinnebrew et al 4.. 100
13-16-17 Goodwin-Campbell, Magnolia Pet. Co. 2..... 70
2-16-17 Smith, Magnolia Pet. Co. 1.... 20
4-16-15 Hays, Marine Oil Co. 2..... 75
10-19-15 Roberts, Montgomery et al 1.. dry
29-17-14 Smith, Myerscough et al 3.... 50
10-16-15 Pate, Ohio Oil Co. 1..... dry
13-16-16 Hearin, Phillips Pet. Co. 1.... dry
7-16-16 Tatum, Plateau Oil Co. 1..... dry
28-16-15 Long, Ray et al 1..... dry
6-16-16 Meel, Rutledge et al 3..... 130
12-16-17 Hodges, Steel et al 3..... dry
3-16-17 Neely, Southerland et al 3.... 35
29-17-14 Smith, Terry Summerfield 6.. 50
3-16-15 Alphin, The Texas Co. 5..... gas
2-16-14 Goodwin, Traffic Oil Co. 1..... dry
1-16-17 Johnson, Wall et al 1..... dry
4-16-15 Hays, Wilson, Nye 3..... 200

Wells completed	35
Production	1700
Dry	14

OUACHITA COUNTY

28-15-16 Hughes, Burton, trustee, 10.. 100
26-15-17 Smith, Clark, H. E. 1..... 65
25-15-17 Yarbrough, Clark H. E. 1..... 40
4-16-15 Murphy, Clark & Melat 3.... 135
31-15-16 Forest City Box Co., Ellis & Dumas 1 90
25-15-17 Keller, Finley et al 1..... dry
28-15-16 Mullins, Forest Oil Co. 4..... dry
27-15-16 J. A. Cramer, Forest Oil Co. 2 125
27-15-16 J. A. Cramer, Forest Oil Co. 12 125
28-15-16 Hughes, Galloway et al 5.... 60
28-15-16 Hughes, Galloway et al 6.... 80
27-15-16 Mullins, Hildreth et al 1..... 60
23-15-17 Anderson, Hunt et al A-3 80
23-15-17 Anderson, Hunt et al B-6 225
23-15-17 Green, Hunt et al B-2 180
23-15-17 Green, Hunt et al B-3 180
23-15-17 Green, Hunt et al B-4 400
23-15-17 Wynn, Hunt et al 1 40
28-15-16 Stringfellow, Hudley et al 4 .. 75
26-15-17 Brown, Magnolia Pet. Co. 3... 80
23-15-16 W. F. Patton, Magnolia Petroleum Co. 2 50
23-15-16 Nettie Patton, Magnolia Petroleum Co. 4 50
25-15-17 Smith, McKirkel et al 2 25
3-15-15 Laney, Meek, J. H. Tr. 2 .. 75
28-15-16 Hamlin, Miller et al 2..... 45
27-15-16 Mullins, Morris Drilling Co. 2 40
23-15-17 Green, Riggs et al 1 55
26-15-17 Jeffus, Staves et al 3 25
27-15-16 Hardin, Sun Oil Co. 1 125
23-15-17 Reynolds, The Texas Co. 1.... 120
20-15-16 Sch, Winner et al 1 50

Wells completed	30
Production	2690
Dry	2

STEPHENS, COLUMBIA COUNTY

13-15-20 Smart, Hickman et al 2 ..... dry

STEPHENS, OUACHITA COUNTY

3-15-19 Morgan, Morgan & Gaughan 1 dry
3-15-19 Morgan, Spear & Johnson 2.. dry

BELLEVUE

15-19-11 Fee, Louisiana Oil Refining Corp. A-16..... 20

CADDO

11-21-15 Louisiana State, Dixie Oil Co. 2 20
1-20-15 Doan-Thigpen, Fortuna Oil Co. 12..... 15
24-21-15 Hobbs, The Texas Co. A-6.... dry

Wells completed	3
Production	35
Dry	1

COTTON VALLEY

15-21-10 W. Cox, Fortuna Oil Co. 1... 150
14-21-10 L. Merritt, Fortuna Oil Co. 4... 35
24-21-10 Bodcau, Humble Oil & Refining Co. B-2 155
24-21-10 Bodcau, Humble Oil & Refining Co. B-4 150
26-21-10 Bodcau, Humble Oil & Refining Co. B-6 60
28-21-10 Nelson, Louisiana Oil Refining Corp. 1 ..... gas
28-21-10 Coyle, Moffatt & Murphy 1...1500
15-21-10 Bodcau, Ohio Oil 8 100
15-21-10 Bodcau, Ohio Oil Co. 9..... gas

Wells completed	9
Production	2150
Gas	3
Gas production	35,000,000

LOUISIANA WILDCATS

Bossier—
31-16-11 Van Hoose, Arkansas Natural Gas Co., A-3 ..... gas
15-23-12 Bodcau Lumber Co., Estes et al 1 15
25-16-12 Hodges, Palmer Corp. B-6... gas
31-16-11 McAlin, Palmer, J. F. 4 ..... gas
32-23-11 Bollinger, Weatherbee, G. W. 1 gas

Caddo—
15-18-15 Bickham, Richardson Oil Co. 1 dry
17-17-16 Mays Brothers, State Line Oil & Gas Co. 1 ..... gas
18-17-16 Bryson, Waterman Drilling & Developing Co. 1..... gas
18-17-16 Bryson, Waterman Drilling & Developing Co. 2 ..... gas

Claiborne—
20-21- 9 Aubrey, Black Oil & Gas Co. 1 dry
34-20- 6 Harmon, Pomeroy et al 1 .... dry
26-21- 5 Fortson, Wordley & Collins 1.. dry
3-11-14 Palmer, Tarver et al 3 ..... dry

Morehouse—
33-20- 5 White, Ladel et al 3 ..... gas
3-21- 4 Tensas, Natural Gas Producing Co. 4 ..... gas

Ouachita—
11-19- 5 E. Collins, Consuming Gas Co. 1 gas
20-19- 5 Fee, Ladel et al 31..... gas
12-19- 4 Carter, Montgomery et al 1 .. gas
7-19- 5 Fee, Southern Carbon Co. 39.. gas
7-19- 5 Fee, Southern Carbon Co. 22.. gas

Union—
25-21-3w Heard, Cargile et al 1 ..... dry

Webster Parish—
1-20-10 T. R. Wiley, Bethany Oil & Gas Co. 1 ..... gas
35-22-11 Allen, Butler, McMurray 1.... gas
33-23-11 Pine Woods Lumber Co., Lloyd Harris 5 ..... gas

Wells completed	30
Production	15
Dry	6
Gas	17
Gas production	202,500,000

ARKANSAS WILDCATS

Ashley County—
4-16- 7 Fee, Spoonse et al 1 ..... dry

Cleveland County—
18-11-11 Word, Stark & O'Mara 1 ... dry

Hempstead County—
31-14-23 Ford, Fullilove Drilling Co. 1 dry

Nevada County—
10-12-20 Henry Prescott Oil Co. 2..... dry
7-14-20 Moss, Southern Oil Co. 1 ..... dry

Wells completed	5
Dry	5

SMACKOVER DISTRICT, UNION CO., ARK.

Rigs

8-16-15 Billyew, Anderson et al 1.
1-16-17 L. Werner, Arkansas Drilling Co. 3.
21-16-15 Jones, British Allied Est. 2.
7-16-16 Carroll, Chambles Drg. Co. 1,
26-16-16 Burton, Cherokee Pet. Co. 8.
13-17-15 Ezell, W. A. Dellmeyer 1.
4-19-16 Bradley, Doorne et al 1.
6-16-16 Hodges, W. H. Gilliland A-2.
2-16-15 Alphin, Gulf Refining Co. 10.
6-16-16 Werner, Gulf Refining Co. 24.
3-16-17 Clawson, Hargett et al 1.
5-16-16 Hinton, Houston Oil Co. 3.
18-16-15 G. F. Murphy, Jones W. W. et al 1.
5-16-15 J. S. Murphy, Keene & Woolf 1.
22-18-14 Terrell, Lemond et al 1.
14-16-15 Edwards, Owen Trustee 1.
1-16-17 Hodges, Rutledge, trustee 4.
5-16-16 Sasser, Smitherman-McDonald B-4.
25-16-16 Burton, United Cen. Oil Corp. 4.
14-16-15 Craig, United Cen. Oil Corp. 6.
6-16-16 Elza, Weatherbee et al 2.

Wells Drilling

7-16-15 Hatfield, Arkade Oil Co. 5.
1-16-17 LaGrone, Ark. Fuel Oil Co. 5.
14-19-11 Union, S. M. Berry et al 1.
8-16-15 Bradford, Frederick and Calvert 2.
25-16-16 Burton, Cherokee Pet. Co. 7.
19-16-15 Alphin, J. W. Clark 21.
9-16-15 Palmer, J. W. Clark 1.
14-16-15 Gillier, Crawford & Sebastian 2.
9-16-16 Childs, Federal Pet. Co. 1.
5-16-16 Werner, Gulf Refining Co. 18.
3-16-15 Williams, Howell et al 1.
26-16-16 Murphy, A. M. Jones 1.
31-16-14 Davis, Liberty Oil Co. 1.
17-16-15 Allgulf, Linn Oil & Ref. Co. 4.
7-16-15 Graves, Linn Oil & Ref. Co. 6.
16-16-16 Harris, Magnolia Pet. Co. 1.
12-16-17 Scott, K. J., Magnolia Pet. Co. 1.
13-19-12 Teele, Mathews et al 1.
1-18-16 Frazier, Natural Gas & Pet. Co. 1.
13-19-17 Fee, O'Brien, P. F. 1.
18-16-15 Berry, Penguin Oil Co. 3.
20-16-15 Hicks, Pure Oil Co. C-1.
30-16-15 Lawton, Pure Oil Co. 1.
7-16-15 LeCroy, Rogers et al 2.
6-16-16 Laney heirs, Simms Oil Co. 1.
22-16-16 Hicks, Smitherman-McDonald 1.
3-16-15 Alphin, J. H., Standard Oil Co. 9.
11-16-16 Alphin, J. H., Standard Oil Co. 15.
9-16-15 Fienniken, Sunny Jim Oil Co. 2.
1-16-17 Neely, Sutherland et al 4.
15-16-16 McAdoo, The Texas Co. 1.
36-17-14 Williams, Wabler et al 1.
4-16-15 Hays, Wilson-Nye 4.
1-18-17 Hodges, Wright et al 2.

Shut Down

5-17-15 Thompson, East et al 1.
12-16-16 Kane, Fields Operators Co. 1.
15-17-16 Dumas, Marr et al 1.
Rigs, 21; wells drilling, 37; total, 58.

OUACHITA COUNTY, ARKANSAS

Rigs

24-15-17 Reynolds, Arkansas Drilling Co. 1.
34-15-15 Snyder, Arkansas Fuel Oil Co. 4.
22-15-17 Wells, Atlantic Oil Prod. Co. B-2.
22-15-17 Wells, Atlantic Oil Prod. Co. B-5.
6-13-18 Lampkin fee, British Allied Est. 1.
21-15-16 Hughes, Barton, trustee 11.
23-15-17 Reynolds, Cumberland Pet. Co. 2.
27-15-16 Cramer, Forest Oil Co. 17.
20-15-16 Minor, C., Forest Oil Co. 3.
36-15-17 LaGrone, Gilliland Oil Co., S-5.
30-15-16 McRea, Gilliland Oil Co. 6.
26-15-17 Werner Gulf Refining Co. A-7.
23-15-17 Anderson, Hunt et al B-7.
23-15-17 Green, Hunt et al B-5.
23-15-16 Halton, Hunt et al 1.
22-15-17 Halton, Hunt et al 2.
3-16-15 Williams, Howell et al 2.
26-15-17 Brown, Magnolia Petroleum Co. 4.
23-15-17 Green, Riggs et al 3.
36-15-17 Shirey, J. S. Smith B-2.
26-15-17 Jeffus, Staves e tal 4.
34-15-15 Joyce, Sure Oil Co. 2.
28-15-16 Hughes, Sutton et al 8.
28-15-16 Hughes, Sutton et al 10.
23-15-17 Ward, The Texas Co. 1.
23-15-17 Ward, The Texas Co. 2.

Wells Drilling

20-15-16 Rowland, Atlantic Oil Prod. Co. C-1.
11-15-17 Elliott, Bray-Hawthorne 1.
12-15-17 Goodwin, Bray-Hawthorne 1.
28-15-16 Hughes, Barton, trustee, 3.
26-15-17 Smith, Clark H. E. 2.
26-15-17 Yarbrough, Clark H. E. 2.
20-15-16 Minor, Roger et al 2.
23-15-17 Reynolds, Cumberland Pet. Co. 1.
36-15-16 McKenzie, Duho Oil Co. 4.
31-15-16 Forest City Box Co., Ellis & Dumas 2.
28-15-16 Hughes, Galloway et al 2.
23-15-17 Reynolds, Gulf Refining Co. 1.
29-15-16 Fincher, Hazen et al 1.
34-15-15 Ferris, Jones, J. N. et al 2.
4-16-15 Berg, Leon et al 2.
31-15-16 Smith, Magnolia Pet. Co. 10.
4-16-15 Hays, Marine Oil Co. 3.
28-15-16 Mullins, Marr Oil Corp. 3.
28-15-16 Mullins, Marr Oil Corp. 4.
33-15-15 Berry, Mazda Oil Co. 1.
29-15-16 Fincher, Mazda Oil Co. 2.
16-14-18 Graves, S. A., Reynolds & Thompson 1.
28-15-16 Stringfellow, Ross et al 1.
25-15-17 Wells, Shmuller, H. A. 1.
36-15-17 Shirey, Smith, J. S. 2.
30-15-16 LaGrone, Stumph & Todd 4.
23-15-17 Reynolds, The Texas Co. 2.

Shut Down

13-15-17 Copenhaven, Bray-Hawthorne 1.
28-15-16 Mullins, Forest Oil Co. 1.
36-15-17 Smith, A. W. Gilliland Oil Co. 4.
22-15-17 Riley, Hammon et al 1.
5-16-15 Hill, Invaders Oil Co. 1.
21-15-16 Ritchie Est., Johnson Drg. Co. 1.
5-16-15 Umsted, Olvey et al 1.
30-15-15 Berg, Simms Oil Co., E-2.
35-15-17 Shirey, Smith, J. S. 1.
22-15-17 Hoffman, Southern Oil Co. 1.
32-15-15 Umsted, Standard Oil Co. 12.
28-15-16 Hughes, Sutton Oil Co. 9.
5-16-15 Goodwin, Wilson Pet. Co. 1.
Rigs, 26; wells drilling 40; total, 66.

WEBSTER PARISH, LOUISIANA

Rigs

24-21-10 Pardee, Alabama Pet. Co. A-4.
24-21-10 Pardee, Alabama Pet. Co. B-2.
19-21- 9 Ramsey, Alabama Pet. Co. 2
34-22-10 Martin, Belchic & Laskey 1.
15-21-10 W. Cox, Fortuna Oil Co.
32-22-10 Nnckerson, Fortuna Oil Co. 1.
26-21-10 Gray, Fortuna Oil Co. 1.
19-20-10 Ambrose, Kennedy et al 1.
28-21-10 Gray, Louisiana Oil Ref. Co. 2.
22-21-11 Lindsay, Louisiana Oil Ref. Co. 3.
28-21-10 Nelson, Louisiana Oil Ref. Co. 3.
21-23- 9 Armor, Louisiana Oil Ref. Co. 1.
22-21-10 Bank, O. V., Ohio Oil Co. 2.
13-21-10 Bodcau, Ohio Oil Co. 13.
16-21-10 Harris, Ohio Oil Co. 1.
23-21-10 Holloway, Ohio Oil Co. 2.
13-21-10 Hope Est., Oil Field Gas Co. B-6.
28-21-10 Gleason, Tidal Oil Co. 2.

Wells Drilling

24-21-10 Pardee, Alabama Pet. Co. A-3.
24-21-10 Pardee, Alabama Pet. Co. B-1.
19-21- 9 Ramsey, Alabama Pet. Co. 1.
29-21-10 Smith, Alabama Pet. Co. 1.
27-23-11 Frazier, Arkansas Fuel Oil Co. 1.
28-23-11 Pine Woods Lumber Co., Belchic & Laskey 6.
6-23- 9 Wiley, T. R., Bethany O. & G. Co. 2
19-21- 9 Crichton, Fortuna Oil Co. 1.
14-21-10 Merritt, S. J., Fortuna Oil Co. 4.
9-23-10 Roberts, Hahnlen, T. W., Tr., 1.
24-21-10 Bodcau, Humble O. & R. Co. B-4.
15-21-10 Bodcau, Humble O. & R. Co. B-5.
28-21-10 Bodcau, Humble O. & R. Co. B-6.
28-21-10 Bodcau, Humble O. & R. Co. B-7.
13-21-10 Bodcau, Humble O. & R. Co. B-8.
28-21-10 Bodcau, Humble O. & R. Co. B-9.
28-21-10 Bodcau, Humble O. & R. Co. B-10.
26-21-10 Davis, Humble O. & R. Co. 2.
13-21-10 Davis, Humble O. & R. Co. 3.
13-21-10 Davis, Humble O. & R. Co. 4.
28-21-10 Nelson, Louisiana Oil Ref. Co. 2.
15-20-10 Hortman, McDowell et al 1.
28-21-10 Coyle, Moffatt & Murphy 2.
13-21-10 Bodcau, Oil Oil Co. 11.
27-21-10 Bodcau, Ohio Oil Co. 12.
27-21-10 Bodcau, Ohio Oil Co. 14.
24-21-10 Hope Est., Oil Field Gas Co. B-4.
13-21-10 Hope Est., Oil Field Gas Co., B-5.
28-21-10 Tillman, Palmer Corp. 1.
28-21-10 Gleason, Tidal Oil Co. 1.
25-22-10 Tinsley, F. M., The Texas Co. 1.
18-21- 9 Hodges, A. J., Woodley Pet. Co. 1.
21-23- 9 Porter Woodley, Wadley, J. K. 1.

Shut Down

29-21-10 Miller, Palmer Corp. 1.
21-21-10 Coyle, Raymond, S. S., et al 1.
8-20- 9 Bible, Stack & Eggers 1.
Rigs, 18; wells drilling, 36; total, 54.

COLUMBIA COUNTY—STEPHENS FIELD

Wells Drilling

26-15-20 Watson, Magnolia Petroleum Co. 2.

NEVADA COUNTY

Rigs

10-14-21 McKinney, Zing et al 1.

Wells Drilling

30-14-20 Phillips, Ouachita Valley Oil Co. 1.
7-14- 20 Mass, Southern Carbon Co. 1.

Shut Down

15-14-21 Blake, Ames and others 1.
10-14-21 E. E. Womack, Ames et al 1.
10-14-21 McKinney, Greenson et al 1.
10-14-21 Womack, Smitherman-McDonald 3.
10-14-21 Drake, Smitherman-McDonald 3.
16-14-21 Butcher, Steel & Sandlin 1.
Rig, 1; wells drilling, 8; total, 9.

CADDO PARISH

Rigs

13-21-15 Louisiana State, Dixie Oil Co. 3.

Wells Drilling

5-20-16 H. Rives et al, Wm. Gross et al 1.
22-20-16 Ferry Lake, Gulf Refining Co. 1539.
24-22-15 C. M. L., Lewis Oil Corp., 5.
15-20-16 Federal Jeems Bayou, The Texas Co. 1.
22-21-15 Crye, Tholl Oil Co., 12.

Shut Down

9-20-16 J. B. H. & F. C., Reynolds Oil & Gas Co. 4.
Rigs, 1; wells drilling 6; total, 7.

BELLEVUE

Shut Down

27-19-11 Catlet, Wedd et al 2.

LOUISIANA WILDCATS

Rigs

31-21-11 Rhodes, Coker et al 1.
19-18-16 Sharp, Brewer & Sewall 1.
8-17-16 Bryson, J. H., Fortuna Oil Co. 1.
22-23-16 Rodessa Oil & Land Co., Rowe-Daniels et al 1.
1- 7-1w Alex & Winnfield, Grant Parish Petroleum Co. 2.
18-10-2e Urania, Urania Pet. Co. 4.
19-22- 5 Crossett, Natural Gas Producing Co. 14.
31-19- 5 Fee, Southern Carbon Co. 44.
2-14-10 Conley, Tarver et al 1.
18-22-2w Voss, Roxana Petroleum Co. 1.
16-22-3w James, Simms Oil Co. 1.

Wells Drilling

30-17- 8 Bryan, Roxana Petroleum Corp. 1.
24-23-12 Bodcau, Atlantic Oil Prod. Co. 2.
31-16-11 Van Hoose, Arkansas Natural Gas Co. A-4.
31-16-11 McAnn, Davis & Hanby 1.
25-16-12 Hodges, Palmer Corp. B-6.
14-17-12 Roscoe, Skannail et al 1.
18-18-11 Johnson, Standard Drilling Syndicate 1.
31-16-11 McDade, Standard Oil Co. 4.
14-17-16 Agurs, Ford et al 1.
9-17-16 Florsheim, Glassell & Myers 1.
11-18-15 Bostwick, Richardson Oil Co. 1.
11-23-16 Pitts, Smith, B. T. 1.
17-17-16 Hunting Club, Waterman Drilling & Developing Co. 1.
22-19- 5 Syndicate Fields, Claiborne-Lincoln 3.
13-22- 7 McElwee, El Dorado Chief Oil Co. 1.
5-19- 5 Taylor, J. P. Evans et al 1.
28-21- 5 Fortson, Woodley & Collins 1.
36-11-14 Pollock, Greyhound Syndicate 1.
22-11-12 Patterson or Robinson, Ulrey 1.
13-20-3w Barrett, Buckner et al 1.
35-20-5e Pratt, Oil Field Co. 1.
13-20- 4 Watson, Oil Field Co. 1.
37-21- 4e Fee, Stovall Drilling Co.
3-21- 4 Tensas Delta, Natural Gas Producing Co. 4.
27-10-10 C. M. Durr, R. O. Roy 1.
24-18-2e Goodwin, Dickson & Frue. 1.
37-19- 4 Glazier, Morrison et al 1.
4-20- 4 Trezevant, Ouachita Natural Gas Co. 3.
21-19-5e Morgan, Palmer Corp. 2.
7-19- 5 Fee, Southern Carbon Co. 42.
31-19- 5 Fee, Southern Carbon Co. 43.
28-19- 5 Daughtie, Union Gas & Producing Co. 4.
35-20-4e Cole, United Oil & Gas Co. 2.
6-16- 5 Jones, White et al 1.
5-12-1w McCarty, Galloway & Arrandale 1.
8- 7-12 Bowman Co., L. M. Emlet 4.
9- 7-12 Bowman Co., L. M. Emlet 5.

Shut Down

11-20-13 Bernstein, Armistead trustee 1.
30-19- 5 Nickerson, Ark. Caddo Oil Co. 1.
2-16-15 Gardner-Blades, Caddo Western Oil Co. 1.
27-16-14 Ales & Ledbetter, Crude Oil Co. 1.
21-14-4e Fee, Culver et al 1.
18-12-14 Southerland, Dr. C. C. Wright et al 2.
11-11-2e Urania, Bur Ben Oil Co. 2.
12-10-2e Urania, Columbia Oil & Gas Co. 1.
12-11-2e Urania, Gulf Refining Co. A-1.
17-16-2e Louisiana Central Lumber Co., Stovall Drilling Co. 2.
26-16-22 Urania, Urania Petroleum Co. 4.
28-20-5e Perry, McKinzie 1.
13-12-10 Marston, Coushatta Syndicate 1.
2-14-12 Fee, LaGrande et al 3.
6-13-2e Feazel, Jones-Walker Oil Co. 1.
7-13-1e Frost Johnson Lumber Co., Love et al 1.
16-13-1e Templeton, Palmer 1.
17-23-1w Clark, Union Parish Drilling Co. 1.
Rigs, 11; wells drilling, 55; total 66.

ARKANSAS WILDCATS

Rigs

29-19-20 Peter Dunn, Kentucky Arkansas Petroleum Co. 1.
20-16-19 Lindsey, Magnolia Developing Co. 1.
25-17-22 Grant, F. E. Mafer 1.
27-12-27-Hempstead County Gas Club, Grassy Lake Oil Association 1.
22-14- 6 Jones, Bennett et al 1.
34-10-23 McCain, Arkade Oil Co. 1.
14-12-23 Snell, Gavett et al 1.

Wells Drilling

14-16-21 Davis, Phillips et al 1.
1-19-21 Williams, Virgil Heath, trustee 1.
3-20-24 Red River Land Co., Ken-Zaw Petroleum Co. 2.
22-19-23 Graves, Zing et al 1.

Shut Down

26-16-13 Freeman-Smith, Harris & Bickley 1.
25-16-20 Burroughs, Southern Drilling Co. 1.
23-18-23 Robinson, Brown et al 1.
24-17-22 Sauter, Hargis et al 1.
30-19-18 Hays, Hosey-McDonald 1.
18-17-22 Sorrell, Johnson et al 1.
20-16-12 Watts, Miller et al 1.
12-17-22 Fullenweider, Moore et al 1.
7-19-19 Emerson, Russell & Kent 1.
35-18-19 Duffer, Smith & Compton 1.
10-13- 6 Karnes, Graves et al 1.
12-13- 6 Trotter, King & Wilson 1.
5-13- 6 Harris, Rhodes et al 1.
23-13- 6 Fee, Stenk et al 1.
8- 6-11 Pike, Haley & Evans 1.
8- 4-12 Meek, Hill & Arnold 1.
17-11-25 Nickols, Hempstead Oil Co. 1.
17-12-23 Yates, Orr et al 1.
22-11-24 Clarke, J. G. Martin 1.
7- 3-10 Hinsley, DeCou Oil Co. 1.
25-16-25 Renick, Wilcox et al 1.
8- 9- 8 Fee, Cambrian et al 1.
15-13-29 Goodrun Lumber Co., Gaines et al 1.
2-13-31 Allen, Crote et al 1.
10-11-21 Hawkins, Johnson et al 1.
32-14-29 Thompson, Kress 1.
22-14-26 Gillespie, Muss Oil & Gas Co. 1.
Rigs, 7; wells drilling 31; total, 38.

ROCKY MOUNTAIN AREA

Summary of Field Operations

WYOMING

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Big Muddy	..	.....	..	..	..	3	3
Salt Creek	27	3,380	..	..	63	70	133
Big Horn Basin	2	100	1	..	10	53	63
Lance Creek	1	.....	1	..	..	4	4
Lost Soldier	2	630	2	1	5	37	42
Rock River	1	55	..	..	1	18	19
Fremont County	2	.....	1	1	..	25	25
Osage	2	25	..	..	7	11	18
Natrona County	1	.....	1	..	..	19	19
Lincoln County	1	25	..	..	4	8	12
Baxter Basin	..	.....	..	..	1	11	12
Miscellaneous	1	.....	1	..	..	22	22
Total Dec.	43	4,215	7	2	91	281	372
Total Nov.	57	6,460	6	1	83	277	360
Difference	14	2,235	1	1	8	4	12

Montana

Sunburst	12	2,380	3	1	7	41	48
Miscellaneous	5	.....	4	1	6	62	68
Total Dec.	17	2,380	7	2	13	103	116
Total Nov.	13	1,387	2	..	13	107	120
Difference	4	993	5	2	..	4	4

Colorado

All operations	1	.....	1	..	14	75	89
Total Nov.	..	.....	..	..	14	76	90
Difference	1	.....	1	..	..	1	1

Utah

All operations	3	.....	1	2	1	26	27
Total Nov.	1	.....	1	..	2	26	28
Difference	2	.....	..	2	1	..	1

New Mexico

All operations	..	.....	..	..	2	30	32
Total Nov.	3	95	..	..	2	22	24
Difference	3	85	..	..	..	8	8

WYOMING

BIG MUDDY FIELD

Wells Drilling

8-32-76 Humphrey Oil Co. 38.
2-33-76 Fenix, Mutual Oil Co. 4.
8-33-76 Carey, Texas Prod. Co. 32.
Wells drilling, 3.

SALT CREEK

Rigs

19-40-78 SW Wyo. Oil Fields 31-A.
24-40-79 SE Wyo. Oil Fields 24-A.
24-40-79 SE Wyo. Asso. 4-A.
30-40-78 SW Wyo. Asso. 21-A.
30-40-78 NW Wyo. Asso. 6-A.
30-40-78 SE Wyo. Asso. 19-A.
24-40-79 SE Wyo. Asso. 1-A and 13-A.
31-40-78 SE Salt Creek Cons. 21-A.
31-40-78 SW Salt Creek Cons. 16-A.
31-40-78 SE Salt Creek Cons. 16-A.
6-39-78 SE Mt. and Gulf 8-A.
19-40-78 SW Midwest Oil Co. 6-A.
13-40-79 SW Midwest and Wyo. Asso. 4-A.
13-40-79 SW Midwest and Wyo. Asso. 3-A.
26-40-79 SE Midwest and Wyo. Asso. 14-A.
25-40-79 SE Midwest and Wyo. Asso. 22-A.
13-39-79 SE Blackstone Salt Creek F-4.
6-39-78 SW Carter Oil Co. R-12.
30-39-78 Teapot Oil & Land Co.
26-40-79 NE Wyo. Asso. 18-A.
26-40-79 SW Wyo. Asso. 24-A.
17-39-78 SE Marine Oil Co. 2, 7-M.
19-40-78 NE Continental Prod. Co. 3-BS.
6-39-78 SW Carter Oil Co. 12-R.
32-40-78 NW Continental Prod. 12-B.
26-40-79 NW Wyo. Asso. 19-A.
34-39-78 SW Mammoth Oil Co. 302.
34-40-78 NW Mammoth Oil Co. 205.
28-39-78 NW Mammoth Oil Co. 405.
28-39-78 SE Mammoth Oil Co. 406.
10-40-79 SE Empire State Oil Co. 24-A.
11-39-79 SW E. T. Williams Oil Co. 2-A.
13-38-78 SW Wyo. Teapot Oil Co. 1.
16-39-79 NE Nicalaysen et al 1.
10-38-78 NW Mammoth Oil Co. 202.
19-40-79 NE Norris Oil Co. 18-A.
26-40-79 NE Wyo. Asso. 18-A.
8-39-78 NE Western States Oil Co. 21-A.
11-39-79 NW Salt Creek Cons. 2-A.
6-39-78 SE Mt. and Gulf 8-A.
19-40-79 SW Midwest Oil Co. 36-A.
26-40-79 SE Midwest Oil Co. 1-A.
17-39-78 NW Western States 13-A.
29-40-79 SW Continental Prod. 6-S, 7-S.
5-39-78 NW Carter Oil Co. 12-D, 13-D.
2-39-79 SE Sinclair Wyo. 11.
1-39-79 SE Mutual Oil Co. 11-A.
2-39-79 SW Mutual Oil Co. 8-A.
5-39-79 SE M. B. Schuster 15-A.
20-39-78 Tract E. T., Ohio Oil Co. 7.
12-39-78 Castle Rock, Ohio Oil Co. 11.
12-40-79 NW Wyo. Asso. 33-A.
23-40-79 SE Wyo. Asso. 15-A.
30-40-78 SW Wyo. Asso. 13-A.
24-40-78 NE Wyo. Asso. 33-A.
24-40-78 SE Wyo. Asso. 26-A.
6-39-79 NE Mt. and Gulf 29-A.
19-40-78 SW Midwest Oil 36-A.
25-40-79 NE Midwest & Wyo. Asso. 1-A.

Wells Drilling

26-40-78 NE Wyo. Oil Fields 26-A, 26-A.
26-40-78 SW Wyo. Asso. 24-A.
24-40-79 SE Wyo. Asso. 21-A.
30-40-78 SW Wyo. Asso. 18-A.
24-40-78 NE Wyo. Asso. 22-A.
19-40-78 SW Wyo. Asso. 16-A.
24-40-79 SW Wyo. Asso. 22-A.
31-40-78 SE Salt Creek Cons. 22-A.
27-40-78 SE Midwest Oil Co. 31-AX.
26-40-78 SW Midwest Oil 13-AX.
14-40-78 NE Midwest Oil 15-A, 17-A.
35-40-78 NE Midwest Oil Co. 25.
1-39-79 NE Midwest Oil Co. 26-A.
1-39-79 NE Midwest Oil Co. 3-A.
13-40-79 NW Midwest and Wyo. Asso. 24-A.
1-39-79 NE Midwest and Wyo. Asso. 4-A.
16-40-79 SE Midwest and Wyo. Asso. 34-A.
16-40-79 SE Midwest and Wyo. Asso. 19-A.
16-40-78 NW Kassming Oil Co. 8-3.
13-39-78 NW Kinney Coastal 19-A.
13-40-78 SW Mutual Oil Co. 19-A.
19-40-78 NW Wyo. Oil Fields 36-A.
15-40-79 NW Wyo. Asso. 4-A.
15-40-79 NE Wyo. Asso. 11-A.
11-40-78 SW Salt Creek Cons. 11-A.
13-40-79 NW Midwest Wyo. Asso. 13-A.
13-40-79 SW Midwest Wyo. Asso. 6-A.
19-40-78 NW Continental Prod. 6-B.
19-40-78 NE Continental Prod. 12-B.
32-40-78 NW Continental Prod. 13-B.
30-40-78 NE Continental Prod. B-14.
2-39-79 SW Mutual Oil Co. 4-LS.
18-40-78 SW Wyo. Kans. Syndicate 6.
23-40-79 NW Wyo. Oil Fields 34-X.
35-40-79 NW Wyo. Asso. 33-A.
26-40-79 NE Wyo. Asso. 29-A.
31-40-78 SE Salt Creek Cons. 26-A.
30-40-78 NE Bonfils Oil Co. 31-A, 20-A.
31-40-79 NE Salt Creek Cons. 6-A, 1-A.
12-40-79 SW Midwest and Wyo. Asso. 2-A.
12-40-79 NW Midwest and Wyo. Asso. 35-A.
18-40-78 SW Wyokans (Marine) Marine Oil Co. 5.

Shut Down

26-40-79 NW Wyo. Asso. 21-A.
34-40-79 SE Salt Creek Cons. 22-A.
34-40-79 NE Midwest Oil Co. 16-A.
10-40-79 SE Empire State Oil Co. 25-A.
6-39-78 SW Staley Syndicate 5.
28-39-78 NE Mammoth Oil Co. 101.
21-39-78 SW Mammoth Oil Co. 304.
18-40-78 SW Continental Prod. 1-W.
28-40-79 SE J. C. Smith 1-S.
29-39-78-NE Mammoth Oil 108.
28-39-78 NE Mammoth Oil Co. 304.
28-39-78 SW Mammoth Oil Co. 302.
28-38-78 NW Mammoth Oil Co. 205.
4-38-78 NE Mammoth Oil Co. 101.
23-39-79 NE Evans Oil Co. 1.
29-39-78 NW Omaha Lusk Oil Co. 1.
2-38-78 NE Teapot Dome Syndicate 34-A.
27-40-79 SW Salt Creek Cons. 36-A.
6-39-78 NE Mountain & Gulf 34-A.
17-39-78 SE Marine Oil 8.
2-39-78 SE Sinclair Wyo. 16.
34-39-79 SW Mutual Oil 35-A.
7-39-78 SE Mutual Oil 1, 2.
28-40-79 SW Jupiter Oil Co. 27-A.
Rigs, 63; wells drilling, 70; total 133.

LANCE CREEK

Wells Drilling

26-36-65 Rodeo, Buck Creek Oil.
3-35-65 Mutual Oil 7.

Shut Down

5-35-65 Lamb, Ohio Oil Co. 5.
18-35-63 NE Union Oil 1.
Wells drilling, 4.

BIG HORN BASIN

Rigs

5-57 99 NW Homestake Oil Co. 1.
33-56-97 Cross Gas Co., Ohio Oil 2.
23-44-95 Flavin, Ohio Oil 1.
5-47-90 Heltzler, Ohio Oil 1.
2-44-96 F. A. McPherson.
32-56-97 Howell, Occidental O. & G.
33-55-95 Westland Oil Co.
10-54-95 Western Oil Co. 1.
17-46-98 Washakie 12, Ohio Oil 1.
7-46-98 Washakie 6, Ohio Oil 2.

Wells Drilling

15-49- 91 Shaffer & Tilley.
16-52-101 Fifty-Six Pet. Co.
1-47-100 NW Midwest Refining Co. 1.
8-51-100 Sonners, Ohio Oil 2.
31-40- 90 Utah Oil & Refining 3.
8-43- 91 Murphy Dome, Prod. & Ref. 1.
20-46- 98 Mill Iron, Ohio Oil 68.
8-51-100 Sonners, Ohio Oil 1.
34-43- 91 Lake Creek, Union Oil Co. 1.
11 45- 97 SE Midwest Refining 1.
31-46- 90 Tensleep, Ohio Oil 2.
18-46- 98 Washakie, Ohio Oil 4.
35-57- 99 Lowley, American Indian Oil 1.
28-41- 93 West Zimmerman Butte Oil 1.
19-46- 98 Meetecsee, Midwest Ref. 16-A.
3-42- 92 Union Oil.
4-50- 95 NW Florence Oil 1.
16-45- 95 Westland Oil 1.
35-43- 91 Utah Oil & Refining 2.
3-35- 97 Royalty & Holding 1.
8-51-100 Union Oil 1.
4-50-100 Flynn & Ache 1.
31-53-100 Cody Oil & Gas.
11-55-102 Tide Oil & Gas.
19-26- 93 Ridgely, Midwest Refining 19-A.
18-46- 98 SW Midwest Refining 20-A.
11-49-102 Florence Oil.
34-43- 93 C. D. Markham et al.
31-56- 96 California Co. 1.

Shut Down

31-48- 99 SW Midwest Oil Co. 18.
26-46-100 NE Producers & Refiners.
28-44- 93 NE F. A. McPherson.
20-53-100 NE Pittsburgh-Southwestern.
10-55- 97 Byron Superior Oil.
29-56- 97 NE Utah Southern Oil.
11-49-102 T. A. Standcliff.
2-47-100 NE Midwest Refining Co.
34-56- 97 Linton, Allen Oil 1.
3-56- 97 Griffin, Allen Oil 3.
31-40- 99 NW Kasoming Oil 1.
22-48- 91 SW Olympus Oil & Gas.
17-49- 91 Frontier Oil & Gas.
27-46- 98 Rankin, Dickie Oil 1.
8-46- 98 Grass Creek Prod.
3-42 92 NE Union Oil 2.
12-45- 97 Midwest Refining Co.
2-56- 97 Jones, Allen Oil.
3-56- 97 Beck Petroleum Co.
16-47-100 Big Horn Development Co.
17-46- 98 Tunador Oil Co.
20-56- 97 Producers & Refiners 1.
19-51- 92 Bruce Holding Co.
Rigs, 16; wells drilling, 53; total, 63.

LOST SOLDIER DISTRICT

Rigs

14-20-88 Lake Valley Oil Co. 1.
24-22-89 E. B. Goode et al.
29-25-88 SE Producers & Refiners 1.
22-26-87 Govt. land, Sand Hills Oil 1.
36-25-89 NE Producers & Refiners 2.

Wells Drilling

14-26-88 NW Producers & Refiners Co. 1.
25-26-88 SE Hughes Royalty Co.
28-26-88 Portland Wyoming.
10-26-90 U. S. Petroleum.
1-26-90 NW Texas Prod. Co. 3.
22-26-90 NW Texas Prod. Co. 5.
17-25-89 SW Producers & Refiners.
32-26-87 NE Producers & Refiners 2.
26-23-88 Bair Oil.
32-26-90 Texas Prod. Co.
7-26-90 Producers & Refiners 1.
20-21-88 NW Producers & Refiners 1.
12-24-89 Govt. land, Producers & Refiners 1.
7-26-89 Producers & Refiners 3, 4.
25-26-88 Kassming Oil 2-D.
27-26-87 Producers & Refiners 23.
31-26-90 NE Bair Oil 1-C.
12-26-90 Texas Production Co.
8-25-88 NE General Petroleum 2.
16-25-89 NW E. B. Goode.
20-21-90 U. P. Producers & Refiners 1.
18-26-88 Hatfield No. 2 Oil Co.

Shut Down

4-26-88 SE Sand Hill Oil Co. 4.
3-26-90 SW Sand Hill Oil Co. 5.
33-26-88 NE Producers & Refiners Co. 3.
23-26-87 SE Marvin Oil Co. 1.
28-26-88 Govt. land, Columbia Petroleum.
21-26-88 Portland Wyoming 1.
9-25-88 Sand Hills Oil 1, 2.
9-29-90 Major Oil Co.
2-26-90 SE Producers & Refiners 1.
14-26-90 Bair Oil D-3.
34-27-90 SW Annabell Wyoming Oil.
35-25-88 M. M. Armstrong.
24-26-87 SW Producers & Refiners 20.
Rigs, 5; wells drilling, 37; total, 42.

ROCK RIVER DISTRICT

Rigs

19-18-77 Ohio Oil 1.

Wells Drilling

26-21-79 SE Southwestern Petroleum 1.
25-16-77 Rex Dome Oil Co.
25-16-77 Rapolio Oil 1.
34-23-79 Allen Lake, Laramie Syndicate.
32-16-74 G. A. Briggs et al.

Shut Down

12-19-78 SW Prairie Dog O. & G.
14-15-75 SE Wyo. Hollow Basin Co.
36-21-79 NW Southwestern Petroleum Co.
26-21-79 SE Southwestern Pet. Co.
34-23-79 Central Pipe Line Co.
14-16-77 H. & H. Oil Co.
32-16-74 Spindletop O. & G.
24-16-77 G. R. McConnell.
4-17-78 Hutton Lake Oil.
18-15-75 Apex Refining Co.
18-15-75 Pet Oil Fields Co.
10-18-77 Carbon County Oil.
12-20-77 McLaughlin et al.
Rigs, 1; wells drilling, 18; total, 19.

FREMONT COUNTY

Wells Drilling

Sand Draw Riverton Petroleum Co.
15-40-101 Mack Oil Syndicate.
7-27- 95 Van Wyoming, Prairie O. & G.
23-32- 95 Producers & Refiners 1.
22- 6- 2 Miles Oil Corp.
9-31- 98 Martin F. Fold et al.
26- 5- 2 Connelly Oil & Gas.
Shoshoni Dist., Wyoming Syndicate.
9-32- 95 NE Producers & Refiners 2.
Shoshoi Dist. Wyoming Syndicate.
15-34- 90 Ward Oil Co. 1.
34- 6- 3 Kinney Coastal 2.
22- 1- 1 McDonald et al 1.
4-31- 98 Derby Dome, Wyoming Oil.
4-31- 98 Burnside Oil Co.
24-32- 90 Myers Petroleum 1.

Shut Down

18-27-97 Prairie Oil & Gas 1.
19-27-95 Prairie Oil & Gas 1.
5-32-94 SE McLennin & Ketch.
15- 6- 2 Union of California 13.
6- 6- 2 SW Union of California 2.
21- 1- 1 Bridger Oil 1.
29-27-95 Fremont Petroleum.
18-27-95 Sage Creek Petroleum.
15-32-95 NE Producers & Refiners 3.
Wells drilling, 25.

OSAGE

Rigs

31-47-63 L. B. Hanson.
31-47-63 West Royalty Oil Co.
Fawcet Ranch Manlove et al.
31-46-63 Clark et al.
17-46-63 LaFleiche Oil.
19-46-63 Sinclair Wyoming Oil.
31-46-63 Lusk Royalty Oil Co.

Wells Drilling

18-46-63 W. J. Zitterall et al 2.
11-44-64 Frederick Oil & Gas.
10-46-63 Lenhart & Briggs.
17-47-63 Wyoming Oil & Gas.
18-46-63 Fred Gravestead.
5-46-64 Fletcher Brothers.
31-46-63 Tom Don Oil Co.
17-46-63 La Fleiche Oil.

Shut Down

6-46-63 Osage Trust Co.
31-45-63 Bachelor Oil Co.
8-45-63 Griffith Oil.
Rigs, 7; wells drilling, 11; total, 18.

NATRONA COUNTY

Wells Drilling

23-33-79 Carrol, H. Meabon et al.
25-36-85 NW Midwest Refining Co. 18.
9-41-80 Newcomb et al.
Pine Mountain, Summit Oil Co.
11-32-82 New York Oil Co. 6.
30-29-87 Schnoor Dome, Kinney Coastal Oil 1
12-36-82 Columbus Oil Co.
20-30-86 John Wyland et al.
15-34-87 NE Mutual Oil 1.
22-36-82 California Co.
36-37-82 SW Midwest Refining Co. 1.
10-36-85 New York Oil.
9-35-85 New York Oil 4.
28-41-81 Midwest Refining Co. 1.
23-34-82 Bradford Wyoming.
7-36-81 Arkansas Natural Gas Co.

Shut Down

23-33-79 Carroll, H. Meabon et al.
31-40-80 Comet Syndicate.
5-39-80 Vernon Oil Co. 1.
Wells, drilling, 19.

LINCOLN AND UINTAH COUNTIES

Rigs

3-27-113 Wyota Oil & Gas.
3-26-113 Newlon Oil 3.
31-28-113 Tip Top Syndicate.
12-29-113 Clinton Oil Syndicate

Wells Drilling

4-26-113 Transcontinental Oil.
34-27-113 Wyota Oil & Gas.
32-19-116 G. C. Conger, trustee.
22-21-117 SW Three States Oil.
1-28-114 Midwest Refining Co.
3-26-113 Superior Oil & Gas.

Shut Down

Afton Dist. Idaho, Wyoming.
1-28-114 Charles Lackey et al.
Rigs, 4; wells drilling, 8; total, 12.

BAXTER BASIN

Rigs

27-17-104 Montacal Oil Co.

Wells Drilling

13-117-104 Producers & Refiners 1.
2- 17-104 NE Midwest Refining Co. 1
23- 17-104 SE Associated Oil Co.

Shut Down

8-16-104 Montacal Oil.
18-16-104 Midwest Refining Co. 6.
26-17-104 Associated Oil.
34-17-104 Montacal Oil.
10-16-104 SW Midwest Refining Co. 19.
14-16-104 NW Midwest Refining Co. 16.
12-16-104 Midwest Refining Co. 13.
10-16-104 Midwest Refining Co. 6-AX.
Rigs, 1; wells drilling, 11; total, 12.

MISCELLANEOUS

Wells Drilling

31-37-67 NW Atlas Oil Co.
45-62 George R. Shaw et al.
24-26-62 Foreman et al.
6-28-62 Jay Em, Foreman et al.
34-52-67 J. H. Duthie et al.
12-26-67 Platt River Development Co.
Lingle Dist. Forman et al.
23-27-93 Associated Oil.
28-42-79 Seattle Syndicate.
20-21-80 Producers & Refiners 1.
16-21-80 Producers & Refiners 1.
26-27-61 Platte Wyoming Oil.
20-29-68 Nebraska Syndicate.
Guernsey Dist. Illinois Syndicate.
31-50-69 Rozet Oil & Gas.
28-48-82 McL., Carter Oil Co.
16-48-82 Belt, Carter Oil Co.
21-48-82 Graham, Carter Oil Co.
Burris Dome Montana Giant Oil.
Buffalo Dist. Kinney Coastal Oil.

Shut Down

17-48-82 Hess, Carter Oil Co.
18-39-68 Glendo Oil & Gas.
Wells, drilling, 22.

MONTANA

CAT CREEK

Rigs

12-15-28 NE Shaffer Oil Co.

Wells Drilling

12-15-28 California Co. 7.
31-15-30 Michael Master et al.
8-15-29 Mutual Oil.
12-15-29 Catlet, Mid-Northern Oil.
9-15-27 Peerless Oil 2.
23-14-28 Winnet Pacific Oil.
1-15-29 Custer Oil & Gas.
28-16-28 Republic, Peerless Oil Co.
9-15-29 NE, Frantz Corp.
7-15-29 NW T. S. Hogan.
9-15-29 Mid-Northern Oil.
29-14-29 Flatwillow Oil.
27-15-27 Frantz Corp.

Shut Down

10-15-29 Fifty Six Pet.
22-15-30 A. D. Miller et al.
11-15-20 Helena Cat Creek Oil.
8-15-29 Logan Corp.
15-15-30 Swartz et al.
11-15-30 Miles City Oil.
Rigs, 1; wells drilling, 19; total, 20.

KEVIN SUNBURST

Rigs

25-35- 2 Stannard, Beaver, Montana 2.
20-35- 1 Stannard, Wallace Oil 2.
11-35- 3 Stockmen's Bank, Ohio Oil 2.
20-35- 2 Whitman, Homestake Exploration
30-35- 2 Hecla Oil Co.
7-32- 2 Mutual Oil.
20-32- 2 Crumley McKnight.

Wells Drilling

29-35- 1 Anderson, Treasurer State 2.
12-34- 2 Adams, Cooperative Petroleum 2.
30-35- 1 Stannard, Securities Oil Co. 1.
32-35- 1 Adams, Hibbing-Shuster 2.
31-37- 1 Beaupre Oil Co.
25-35- 3 Roseth, Van Meer Oil Co.
21-36- 3 Kevin Oil & Gas Syndicate 2.
24-35- 2 Coeur d'Alene-Hagerty 2.
13-34- 2 Frazer-Tenbeck 1.
17-34- 2 Postelwait-Huestis 1.
4-34- 1 Hochspring, Wel Oil Syndicate
8-34- 2 NE Pittsburgh-Montana Oil.
4-34- 2 Corey, Crumley-McKnight 1.
34-35- 3 Williams et al.
5-34- 3 Mary, Eagle Oil Co.
2-34- 2 Steel, Big West Oil 2.
24-35- 2 Byrene, Oil Producers Synd. 1.
4-34- 2 Corey, Johnson Oil Synd.
16-33- 1 State, Mutual Oil 1.
5-34- 2 Sweeny, Seattle Foster 2.
29-35- 1 Anderson, Sylvester Oil 3.
32- 6- 2 Roundsley, Sunburst Oil & Gas.
22-35- 2 Newman, California Co. 2.
21-34- 1 Stockmen's Bank, Potlach O. & G.
24-33- 1 Shelby Syndicate 1.
28-37- 2 McAlphin, Spartan Oil 1.
20-35- 2 Halter, Sunburst Prod. 2.
7-34- 1 Kartz, Russell Oil et al.
18-34- 1 Skinner, Creel Oil.
34-35- 1 Jerring, First International.
32-35- 1 Putnam, Keystone Oil Co.

Shut Down

24-35- 3 Fryberger, Western Drilling Co. 1
8-34- 2 Hurley, Claresholm Oil Co. 1.
27-35- 3 Houston, Moffet et al.
20-33- 1 Bailey, Flood Watson.
23-33- 1 Webb, Shelby Oil & Gas.
2-35- 1 Skilton, Sweetgrass Arch 2.
12-34- 1 Peterson, Lucky Forty Oil.
13-33- 8 Campbell, Campbell Syndicate 1.
16-34- 2 NW, Rainbow Oil.
1-34- 2 NE Sunburst Oil & Gas.
Rigs, 7; wells drilling, 41; total, 48.

MISCELLANEOUS

Rigs

Livingstone Dome, Whiteside et al.
Porcupine Dome, Stellar Oil & Gas.
24-14-15 Fullerton Oil.
12-16-32 Hibbard Oil.
4-26-39 Mid-Northern Oil.
Coal Ridge, West Virginia Oil.

Wells Drilling

5-35-21 NE P. G. Ostlund 1.
10-18- 2 NW Moscow-Idaho.
10-19- 6 SE 20 Dollar Bill Syndicate.
6- 2-24 SE American Indian Oil Co. 2.
27- 3-24 SE Murray Brothers.
5- 1-31 NE, Allen Oil Co.
8- 4-23 NE Hoosier Oil Co.
22- 2-25 Lake Basin Oil.
8- 4-23 NE Hoosier Oil.
13- 1-21 Putnam, Mid-Northern Oil 1.
11- 1-22 NE Absoraka Oil Dev.
23- 1-21 Price, Mid-Northern Oil 1.
23- 1-12 Keeler, Springdale Syndicate.
33-16-28 H. H. Swarts, Jr.
9-31-19 Deny, California Co.
14-14-25 Flatwillow, AMZ Syndicate.
28-16-27 Brush Creek Syndicate.
28- 5-21 Absaraka Oil Development.
34- 7-16 NE California Co.
32-25-20 Butler Oil & Gas.
24-28-12 Continental Production.
17- 3-19 Snyder, Mid-Northern Oil 1.
4-17-20 California Co.
26- 1-21 Modrell 2, Mid-Northern Oil 1.
20-24- 1 C. A. McDonald et al.
4- 2-27 Mid-Northern Oil.
36- 1-21 Lacy, Midwest Refining Co.
23- 2-21 Lindsay, Midwest Refining Co. 1.
16- 5-27 Byron Superior Oil.
20- 1-20 California-Absoraka Oil.

Shut Down

20-25- 1 Larsen, Edwards and associates
1-20- 6 Jones, W. M. Edwards

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ONE concern doing business with the Petroleum Industry will need 700 tons of Putty for its 1925 work.

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The Oil and Gas Journal

Classified Wants Section
"Biggest in America"

18-22- 3 SW Elk Horn Oil & Gas Co.
32-26- 2 NE McCue-Doheny 1.
18- 3-23 SW Securities Prod. Co.
5- 2-24 NE American Indian Oil.
24- 5- 8 SW Potter Basin Oil & Gas.
35-32-32 SW Bowdoin Oil & Gas.
7-27- 7 NW Circle Oil.
25-10-39 Stellar Oil & Gas.
18-34- 2 Beck Petroleum.
18-24- 3 Cascade Oil.
2-28- 3 Dry Fork Oil.
26-10-39 Stellar Oil & Gas.
32- 4 16 Consolidated Oil & Gas.
13- 3-22 SE Murray Brothers 3.
32-30- 2 Denzer, Drake Oil.
13- 3-23 Securities Prod. 4.
21-14-28 Black Hawk Oil.
22- 2-25 McMennamin et al.
18- 6-24 Minnemier & Newman.
3-12-25 Minnesota Flatwillow.
6-13-14 Fulton Oil.
26-14-20 NW Jackson Dome Oil.
30-15-26 Winnet Shallow Oil Syndicate.
22-23-12 Hager Stevenson.
7-27- 1 Tri City Oil.
18-26-26 Walker Brothers.
Devil's Basin, Alberta Block Coal Co.
35- 2- 7 Gladys Belle Oil.
Coalwood Dome, Annamay Oil Co.
Hailstone Basin, Hailstone Basin Oil.
Devil's Basin, Montana Central Oil.
Devil's Basin, Monarch Oil.
24- 5-17 Unit Oil & Gas.
23- 3-23 Davis Creek Syndicate.
33- 5-28 Beauvois Oil.
12-11-13 Kalispell Syndicate.
6- 5-25 Grey Eagle Oil.
31-15-45 Crow Rock Oil.
2- 2-26 Clark's Fork Oil.
11- 1- 1 Ruby Ridge Oil.
Rigs, 6; wells drilling, 62; total, 68.

COLORADO

Rigs

17- 5-64 Hog Ranch, Roland Oil Co.
10- 3-44 Yuma Valley Oil Co.
13- 1-46 NW, Yuma Valley Oil Co.
1- 8-69 Morrell, Petroleum Prod. Corp.
17- 8-68 Fort Collins Chief Oil.
20- 2-46 General Oil Co. 1.
3- 2-44 Wrayfield Oil Corp.
29-10-68 American Petroleum.
12-38-70 Green Mountain Petroleum.
31- 9-68 Midway Oil & Gas.
10- 2-70 NW, Mullin Syndicate.
27- 2-70 Rainbow Oil & Development Co.
7- 9-68 Union of California.
28- 2-43 Strangway, Mutual Oil.

Wells Drilling

4- 6-68 Webster, Associated Oil Co.
19- 8-68 Meyers, Union of California.
1- 8-69 Hoff, Centennial and Sunset.
1- 9-69 Thiming, Union Oil Co.
8- 9-69 Warren, Union of Colorado.
25-24-61 SW, Utah Southern Oil.
30-2-102 Midwest Refining Co.
22- 4-92 French, Midwest Oil 1.
22- 4-92 SE, Midwest Oil 2.
27- 4-92 NE, Midwest Oil 3.
28- 2-43 Strangway, Mutual Oil Co.
4-45-16 NW, The Gilmore Co.
3-21-69 SE, Fox Hills Co.
1-20-63 Baxter, Salida Oil & Ref. Co.
3- 2-44 Wright, Wrayfield Oil Corp.
19- 8-68 Ver Stratten, Union of California.
30- 8-68 Blunk, Union of California.
31-10-68 Buckeye, Union of California.
19- 5-69 Alps, Gateway Oil Co.
15-21-65 Union of California.
18-20-46 SW, Nee-No-She Oil.
20-27-46 NW, Lamar Oil.
5- 6-68 Majestic Oil.
2-32-12 Liedecker et al 2.
28- 2-70 Gehring, Haystack Oil.
17- 9-68 Meredith, Quaker Oil Co.
32-10-68 Hess, Union of California.
2- 8-69 Douglas Oil Co.
19- 9-68 Harwood, Great Northern Oil.
30- 2-69 McIntosh, Gnome Oil & Refining.
13-12-77 C. F. & I., Ohio Oil 1.
34- 2-69 Johnson, Roland Oil 1.
19-16-48 Schultz, California Co.
11- 1-44 Hildreth, Hessick Drilling Co.
14-14-95 Mid-Colorado Oil.
13- 8-69 Centennial State Petroleum.
22- 1-69 Prince, Ohio Oil 1.
31- 2-69 NW, White River Dev. Co.
5- 1-43 Hessick Drilling Co.
8-8-102 Smith, Sun Oil Co.
20- 8-97 Harrison Syndicate.
36-10-69 Union of California.
8- 9-68 Ketterman, Colorado Oil Prod.
32-10-68 SE Imperial Oil.
4-32-66 Tulsa Oil Leasing Co.
9- 4-91 Meyers, Texas Prod. Co.
22- 4-89 Beaver Creek, Transcontinental Oil.
24- 4-93 Axil Basin, California Co.
31- 5-98 Morgan, Union of California.
16- 3-91 Marland Oil.
16- 5-94 State, Hogan Interests.
8- 4-67 Carter Oil.
7- 6-86 Texas Prod. Co.
34-17-70 Mutual Oil Dev.
9-12-62 Uliom, Roland Oil Co.
16- 4-69 State, Midwest Refining Co.
Pueblo District, Chico Basin O. & G.
23-21-65 Colorado Oil.
24- 9-69 SW, Wellington Oil Corp.
6- 9-68 Scott, Union of California.
16- 9-68 State, Union of California.
14- 4-92 Ahern, Yarg Prod. Co.
20- 1-93 Mariand Oil Co.
30- 4-68 Panuco Explo.

Shut Down

33- 8-68 Chandler, Brendel & Ache.
23- 3-64 Eman Oil Co.
3-35-58 Las Animas Syndicate.
5-26-65 Moody Lake Oil.
34- 5-91 Rennie, Texas Prod.
33- 5-91 Hamilton, Texas Prod. 1.
34-33-12 J. A. Liedecker 1.
16- 4-91 State, Texas Prod. Co.
28- 5-91 Freeman, Texas Prod. Co.
35- 4-91 Hamilton-Salt Creek Co.
36- 5-99 State, Producers & Refiners.
Rigs, 14; wells drilling, 75; total, 89.

UTAH

Rigs

18-22-21 Metropolis Oil.

Wells Drilling

30-20-22 Utah Oil & Refining 2.
10-19-21 Utah Oil & Refining.
33-43-17 Monumental Oil.
Virgin Field, Gustaven Oil Co.
Roselle District, Lakeside Oil Co.
Roselle District, Lakeside Oil Co.
34-25-21 Big Six Oil.
22- 3-24 SW, Producers & Refiners 1.
16- 2- 5 State, Western Empire Oil.
23-42-17 Monroe Oil.
27-41-97 Glockner, Utah Southern Oil 1.
Crescent Dome, Crescent Eagle Oil.
Diamond Fork, Gustaven Oil Co.
31-32-18 Union Oil of Utah.

Shut Down

12-19-13 Utah Oil & Refining.
17- 4- 6 Utah Southern & Ute Petroleum.
13-14- 9 Castledale Oil.
27-16- 4 Producer Oil.
Lakeside Dome, W. R. Holmes.
Diamond Fork, Franco Utah Oil.
25-13- 2 Cache Valley Oil.
2-17- 3 Utah Central Oil.
Harrisburg Dome, Virgin Oil Co.
Evans Claim, Uintah Oil Co.
Hill Creek, Hill Creek Oil & Refining.
Hill Creek, Mutual Oil.
Rigs, 1; wells drilling 26; total, 27.

NEW MEXICO

Rigs

15-23-24 Florsheim Oil Co.
5-30-13 H. L. Williams.

Wells Drilling

32-18-28 Illinois Co. 6 and 7.
19-30-10 Lexi Oil Co. 1.
31-32-13 Four States Oil Co.
20-29-11 Coal Creek Oil Co.
21-30-11 Home Gas Co.
30-18-29 SW Burgess & Goodale.
30-18-28 Rotary Illinois.
29-18-28 SE Holman Ferson.
23-13-18 Vermejo, Union of California.
22-18-27 NW, Oscar Howard.
20-32-13 H. L. Williams 3.
34-21-26 Tracy, Ohio Oil 1.
17-21-13 H. L. Williams 4.
8-30-13 H. L. Williams 5.
23-23-13 Roy T. Clapp.
23-23-11 Bisti Oil Co.
Ute Dome J. A. Liedecker.
31-32-13 Four States Oil.
16-30-11 Aztec Oil Syndicate.
34-30-11 R. A. Carter et al.
4-18-28 SW New State Oil.
15-29-11 Bloomfield Oil & Gas.
16-32-14 Gypsy Oil Co.
6-29- 9 Pool Stacy Syndicate.
13-29-16 Santa Fe Mutual Syndicate.

Shut Down

29-17-27 Brainard, Welch et al.
6-14-13 San Juan Development Co.
12-29-13 Shiprock Oil Co.
25-39-12 Hall et al.
14-29-11 Hubble & Hall.
Rigs, 2; wells drilling, 30; total, 32.

WYOMING

WELLS COMPLETED

23-40-79	SW	Wyoming Oil Fields 8-A.	819
26-40-79	SW	Wyoming Asso. 29-A...	33
15-40-79	NE	Wyoming Asso. 36-A	187
34-40-79	SE	Wyoming Asso. 15-A.....	262
31-40-78	SE	Salt Creek Con. 19-A.....	212
2-39-79	NW	Salt Creek Cons. 27-AX..	340
12-40-79	NE	Mt. and Gulf 35-A.....	30
12-40-79	NE	Mt. and Gulf 4-A	11
26-40-79	SE	Midwest Oil Co. 14-A....	350
35-40-79	NE	Midwest Oil Co. 13.....	40
30-40-78	NW	Utah Oil & Ref. Co. 14-A	25
17-39-78	NW	Western States 25-A.....	30
5-39-78	NE	Western States 30-AS....	37
17-39-78	NE	Carter Oil Co. P-13.....	40
19-40-78	NW	Utah Oil & Ref. Co. 11-A	175
31-40-78	SW	Salt Creek Cons. 21-A...	3
6-39-78	NE	Mt. and Gulf 21-A	34
31-40-78	NE	Salt Creek Cons. 10-A ...	60
26-40-79	SW	Wyo. Asso. 34-A	79
35-40-79	NE	Midwest Oil 12	50
13-40-79	NW	Midwest & Wyo. Asso 22-A	188
31-40-78	SE	Salt Creek Cons. 15-A....	25
19-40-78		Bradley 4, Mutual Oil	100
30-40-78		Black 12, Mutual Oil	50
32-40-78		White 8, Mutual Oil	200
30-40-78	NW	Utah Oil & Ref. 23-A	25
19-40-78	SE	Continental Prod. 21-A..	75
3-35-65		Mutual Oil Co. 8	dry
14-44-98		Western States Oil & L.	100
32-58-99	NW	Thompson-Elk Basin	dry
33-26 88	SE	Prod. & Ref. Co.	gas
25-25-87		Prod. & Ref. Co.	30
1-22-89	SE	Prod. & Ref. Co.	dry
11-26-90	SE	Prairie Oil & Gas 57 ...	600
11-26-90	SE	Bair Oil Co. B-4	dry
27-20-78		H. & C., Ohio Oil Co. 1	55
7-28-92	NW	Southwestern Pet. Co..	gas
18-27-95		Prairie Oil & Gas C-2.....	dry
20-46-63		Argonaut Pet. Co.	10
20-46-62		Byron-Gardner Co.	15
7-36-81		Columbus Oil Co.	dry
3-24-112		Wyoming Reserve Oil Co.....	25
21-31-79		Big Seo Oil Co.	dry

Wells completed	43
Production	4215
Dry	7
Gas	2

MONTANA

29-35- 1		Bluhm, Elliott-Collander.....	dry
4-34- 2		Storme, Shoshone Oil Co.	gas
29-35- 1		Maughan, Sweeney Oil Co.	40
32-35- 1		Shuster, Adams Oil Co.	50
4-34- 2		Norum, Becket et al	10
4-34- 2		Carey, Crumley-McKnight	30
4-34- 2		Whitman-Corey-Sunburst	dry
21-35- 2		Allen, Big West Oil 4	100
4-34- 2		Moore, Queen City 7	100
4-34- 2		Corey, Johnson Oil Synd. 2....	2000
1-34- 2		Lewis, Lilley et al	dry
24-35- 2		Byrne, Oil Prod. Synd.	50
4-31-19		SE, Montana Co. No. 1.....	gas
32-23- 3		Ross, Greater Great Falls....	dry
9-11-24		NW, Absaroka Oil Dev.	dry
36- 7-18		SE, California Co.	dry
25- 7-18		E. H. Churchwell et al	dry

Wells completed	17
Production	2280
Dry	7
Gas	2

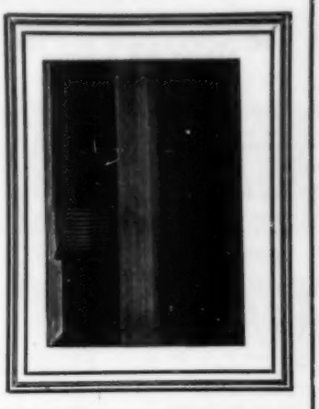
COLORADO

25-21-44		Rosice, Ohio Oil Co.	dry

UTAH

12-19-13		Utah Oil Refining Co.	gas
12-16-13		Utah Oil Refining Co.	gas
21-42-18		Texas Production Co.	dry

Wells completed	3
Dry	1
Gas	2



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